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Nephtyidae (Polychaeta) from Japan

I. The Genera *Inermonephtys*, *Micronephthys* and *Aglaophamus*

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Abstract Materials of three nephtyid genera, *Inermonephtys*, *Micronephthys* and *Aglaophamus* from Japanese waters were examined. Ten species or subspecies and one indeterminable species are recognized; they include four new species, *Aglaophamus japonicus*, *A. lobatus*, *A. amakusaensis* and *Inermonephtys japonica* and one new subspecies, *Aglaophamus gippslandicus bisectus*. The holotype of *Aglaophamus jeffreysii* McINTOSH, 1885 collected from Japan was re-examined.

The family Nephtyidae include four genera, *Inermonephtys* FAUCHALD, 1968, *Micronephthys* FRIEDRICH, 1939, *Aglaophamus* KINBERG, 1866 (sensu HARTMAN, 1950) and *Nephtys* CUVIER, 1817. This paper deals with species of first three genera collected from Japanese waters. Species of *Nephtys* will be treated in a second paper.

Of species now recognized in *Inermonephtys*, *Micronephthys* and *Aglaophamus*, McINTOSH (1885) described *Aglaophamus jeffreysii* from off O-shima, Northern Kyushu, and IMAJIMA (1970) reported five species from the Tsushima Strait. Thus the three genera have remained poorly known from Japan.

Materials examined were chiefly collected by the senior author; other material was collected by the staff of the Kanagawa Fisheries Experimental Station, by Ms. Hiroaki TSUTSUMI of the Amakusa Marine Biological Laboratory, Kyushu University and Dr. Isao HAYASHI of the Kyoto University.

Ten species or subspecies and one indeterminable species are recognized from the Japanese waters. Four new species and one new subspecies are described. The holotype of *Aglaophamus jeffreysii* McINTOSH, 1885 was re-examined.

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The bulk of the collection, including type-specimens, has been deposited in the National Science Museum, Tokyo.

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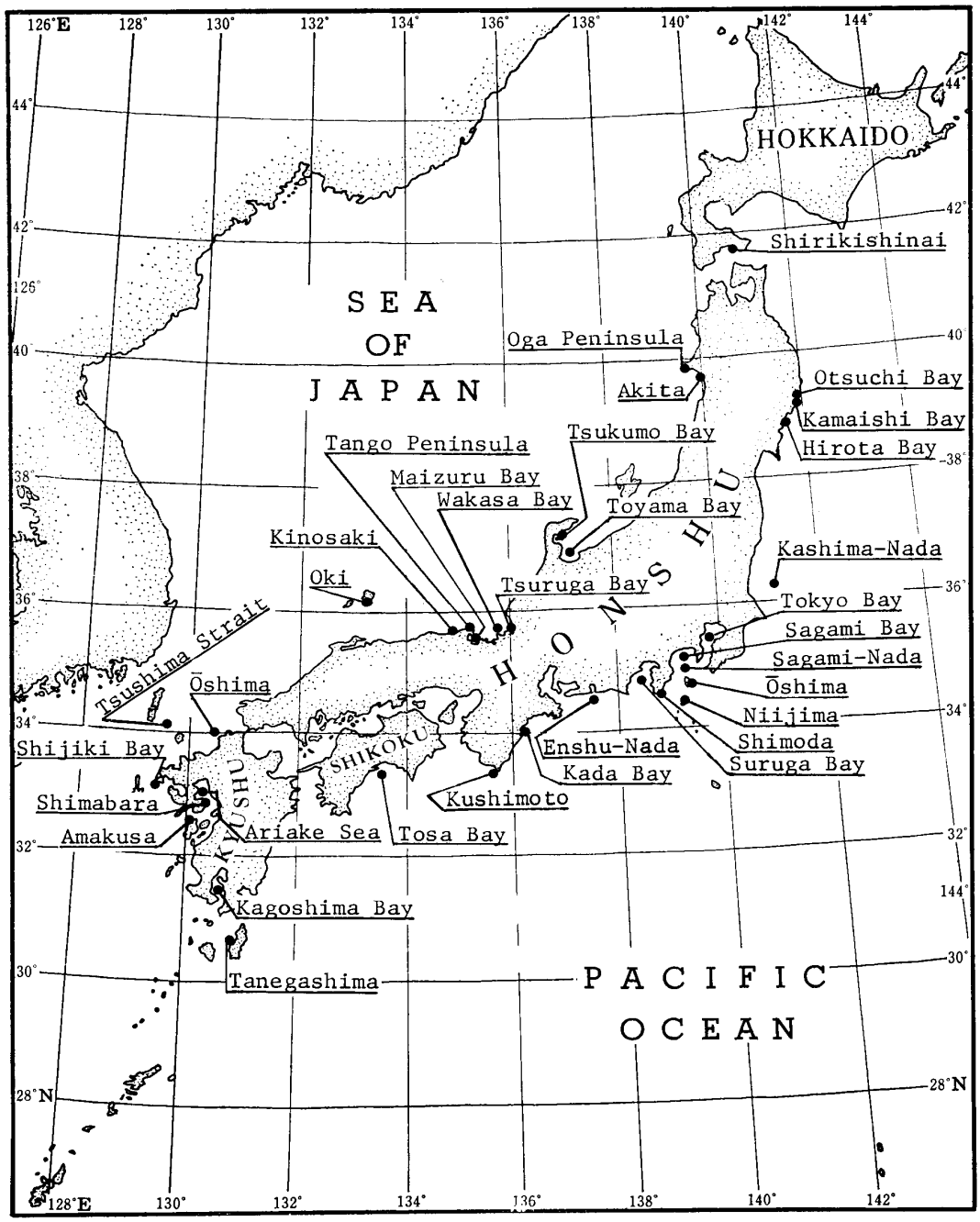

Fig. 1. Map of Japan, showing localities mentioned in the text.

Key to Japanese Species of *Inermonephtys*, *Micronephthys* and *Aglaophamus*

1. Interramal cirri present 2
1′. Interramal cirri absent ..... *Micronephthys sphaerocirrata orientalis*
2. Proboscis with papillae ..... *Aglaophamus*
2′. Proboscis without papillae ..... *Inermonephtys japonica*

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3. Proboscis with 14 rows of subterminal papillae 4
3′. Proboscis with 22 rows of subterminal papillae 9
4. Proboscis with a middorsal papilla..... 5
4′. Proboscis without a middorsal papilla 6
5. Postacicular fascicle include lyrate setae ..... *A. lobatus*
5′. Postacicular fascicle without lyrate setae ..... *A. japonicus*
6. Interramal cirri present from setigers 9–10 ..... *A. malmgreni*
6′. Interramal cirri present from setigers 2–4 7
7. Postacicular lamellae with smooth margin 8
7′. Postacicular lamellae with serrated margin ..... *A.* sp.
8. Neuropodium with a superior lobe; interramal cirri present from setiger 2.... ..... *A. sinensis*
8′. Neuropodium without a superior lobe; interramal cirri present from setiger 4.. ..... *A. gippslandicus bisectus*
9. Interramal cirri present from setigers 6–8 ..... *A. verrilli*
9′. Interramal cirri present from setigers 3–4 10
10. Neuropodial postacicular lamellae shorter than acicular lobes in fully developed median parapodia ..... *A. amakusaensis*
10′. Neuropodial postacicular lamellae longer than acicular lobes in fully developed median parapodia ..... *A. jeffreysii*

Genus ***Inermonephtys*** FAUCHALD, 1968

Prostomium rectangular with one pair of palps attached ventrally. Palps with a small papilla distally. Nuchal organs with eversible digitiform papilla present at posteroectal margins of prostomium. Proboscis totally lacking papillae but with pair of spindle-shaped jaws. Interramal cirri involute. Lyrate setae present. Acicula curved at tips.

Inermonephtys japonica n. sp.

(Fig. 2, a–q)

Material examined. Off Boso Peninsula, 34°53.8′N, 140°00.5′E–34°53.3′N, 139°59.9′E, in 180–160 m (11 specimens), 35°01.0′N, 140°04.6′E–35°01.3′N, 140°05.1′E, in 77–83 m (12), 35°00.1′N, 140°06.8′E–35°00.5′N, 140°07.5′E, in 145–150 m (3), 34°57.2′N, 140°02.4′E–34°57.6′N, 140°02.7′E, in 115 m (1), KT–76–16; near Shimoda, Izu Peninsula, 34°36.9′N, 138°57.3′E–34°36.4′N, 138°57.2′E, in 80 m (2), 34°44.4′N, 139°02.0′E–34°44.5′N, 139°01.8′E, in 100–92 m (1); Sagami Bay, 35°09.9′N, 139°34.8′E–35°10.3′N, 139°34.9′E, in 84 m (holotype and paratype); 35°17.48′N, 139°32.48′E, in 6 m (3), 35°17.00′N, 139°34.00′E, in 6 m (1), 35°15.30′N, 139°25.45′E, in 100 m (1), 35°16.42′N, 139°24.0′E, in 270 m (1), for survey in Kanagawa Fish. Exper. Sta.; Suruga Bay, 34°45.3′N, 138°44.0′E–34°45.6′N, 138°43.7′E, in 135–144 m (1), 34°54.8′N, 138°45.2′E–34°54.4′N, 138°45.3′E, in 162–180 m (1), KT–76–3; Enshu-

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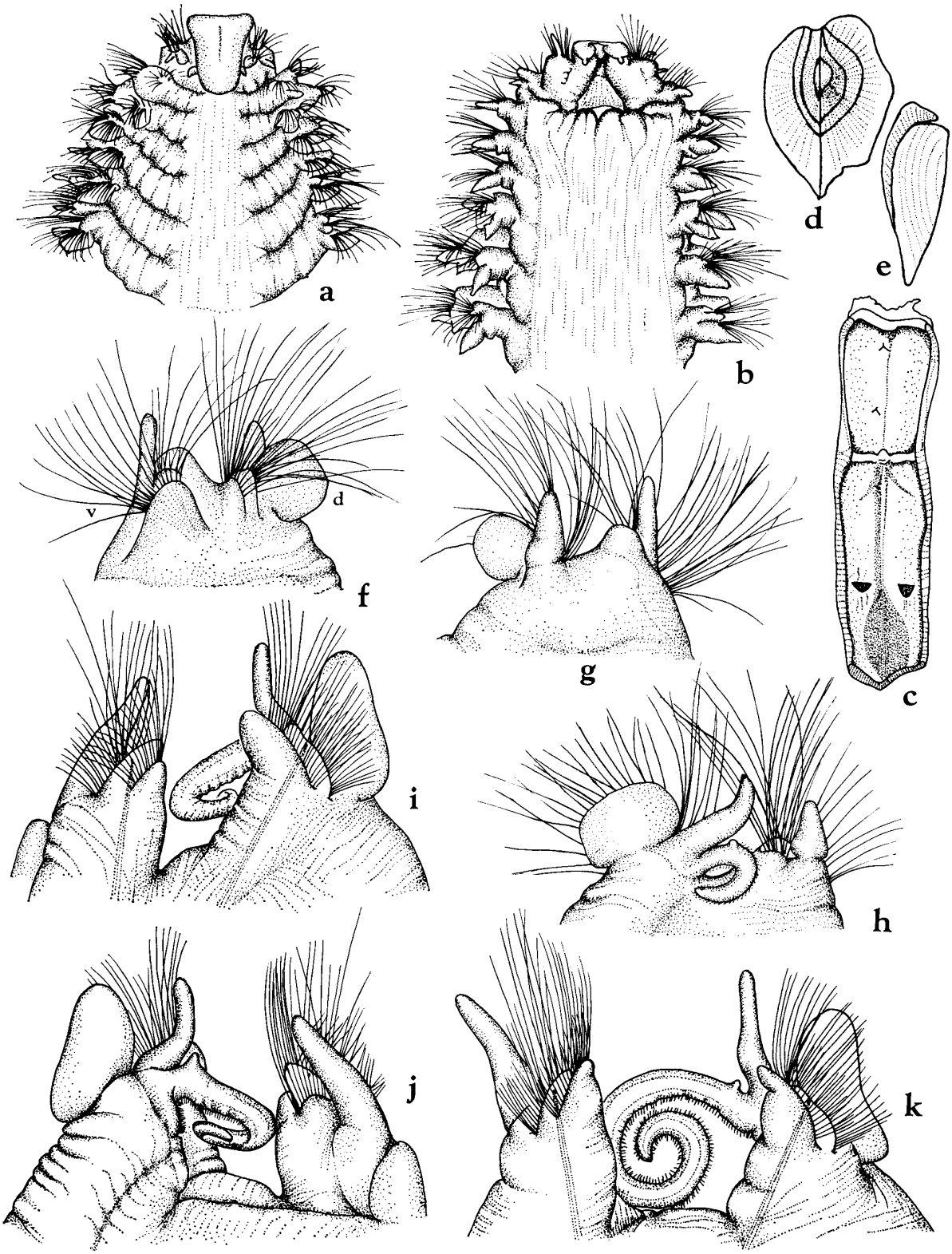

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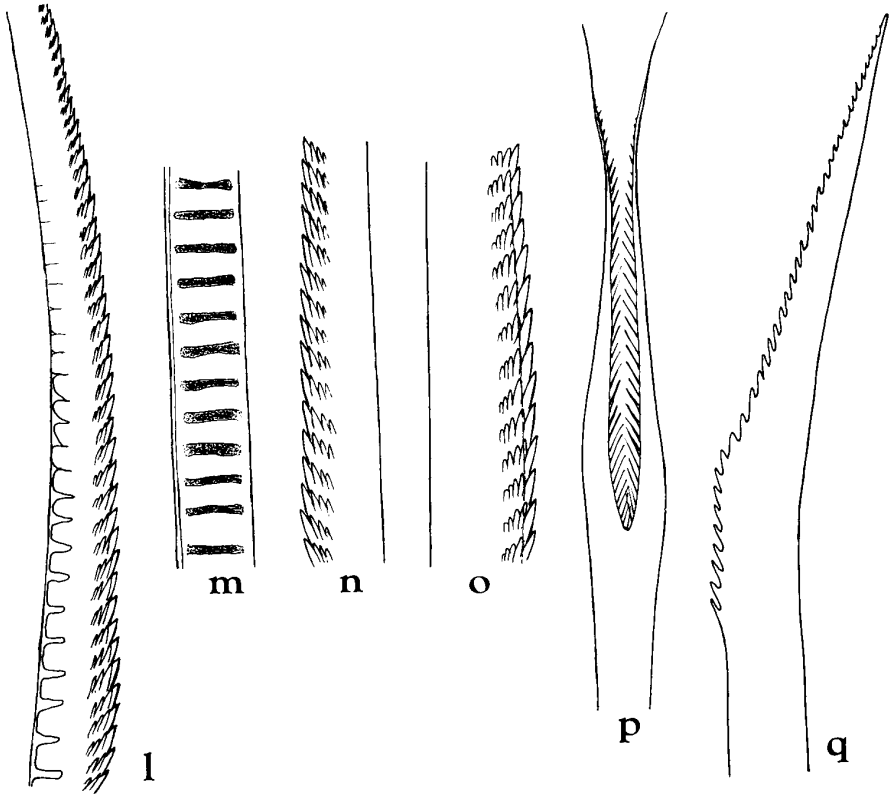

Fig. 2. *Inermonephtys japonica* n. sp. a, anterior end, in dorsal view, ×33; b, the same, in ventral view, ×34; c, inner side of proboscis shown by dissection, ×8; d,e, jaws, seen from the free edge (d), lying on its anterior surface (e), ×54; f,g, first parapodia, in anterior view (f) and posterior view (g), ×46; h, fifth parapodium, in posterior view, ×30; i,j, 25th parapodia, in anterior view (i) and posterior view (j), ×33; k, 50th parapodium, in anterior view, ×33; l, barred setae with transverse rows of denticles in anterior setiger, in lateral view, ×770; m, the same, in anterior view, ×770; n, spinulose seta in preacicular fascicle from median setiger, ×1730; o, spinulose seta in postacicular fascicle, ×1160; p, lyrate seta, ×510; q, spinulose seta in postacicular fascicle, ×750.

Nada, 35°32.9′N, 137°25.4′E, in 80 m (1); Toyama Bay, 37°21.7′N, 137°18.3′E, in 31 m (1), KT–75–6, coll. C. OGURO; Wakasa Bay, in 115 m (1), coll. I. HAYASHI; Tsushima Strait, 33°49.9′N, 129°29′E, in 100 m (2), 34°42.7′N, 129°45.6′E, in 105 m (1), 34°44.5′N, 129°56.4′E, in 120 m (3), 34°37.5′N, 129°50.7′E, in 110 m (2), 34°03.3′N, 129°04.5′E, in 105 m (1), 34°16.0′N, 129°31.5′E, in 105 m (1), 34°25.1′N, 129°59.3′E, in 115 m (1), 34°45.9′N, 129°35.9′E, in 64 m (1); Kagoshima Bay, 31° 16.5′N, 130°42.3′E, in 100 m (1), 31°31.2′N, 130°33.2′E, in 26–32 m (4), 31°35.8′N, 130°35.5′E, in 44 m (4).

Description. The holotype is the larger fragment and measures 63 mm in length and 3 mm in width including parapodia; it consists of 118 setigers.

The prostomium is nearly rectangular, with slightly concave frontal margin; the

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posterior margin is rounded and extends back to the posterior margin of the first setiger. The nuchal organs is represented by a pair of short eversible digitiform papillae, and are situated at the posteroectal margins of the prostomium. Eyespots are not visible (Fig. 2 a). A pair of palps are bent down below the frontal margin of the prostomium; each palp has a projecting papilla distally (Fig. 2 b).

The proboscis is completely smooth without traces of papillae; its pharyngeal wall is strongly muscular, and the inner surface is cuticularized (Fig. 2 c). The jaws are situated near the base; they have a spindle-shaped base and a straight free edge. A curved tip is absent (Fig. 2 d, e).

The first parapodia are biramous and well developed. The notopodium has a conical acicular lobe and the preacicular lamella is low. The postacicular lamella is well developed and quadrangular; dorsal cirrus is large and stout. The neuropodial acicular lobe and preacicular lamella are similar to the corresponding notopodial ones. The neuropodial postacicular lamella is rounded, and less prominent than the notopodial one. The ventral cirrus is long and slender (Fig. 2 f, g).

The interramal cirri are first present from the second parapodium and are already well developed and involute, with a small accessory cirrus (Fig. 2 h); some small individuals have interramal cirri from the third parapodium.

In a fully developed parapodium at the 25th setiger (Fig. 2 i, j) each acicular lobe ends in a digitiform lobe with a thick base. The notopodial preacicular lamella is stout and digitiform and extends beyond the acicular lobe. The notopodial postacicular lamella is ellipsoid in shape with a rounded tip. The dorsal cirrus is digitiform and slender, it is as long as the postacicular lamella. The neuropodial preacicular lamella is conical and shorter than the acicular lobe. The postacicular lamella is short and rounded. The ventral cirrus is long and digitiform with a broad base. The interramal cirrus is well developed and nearly fill the space between the noto- and neuropodium; there is a large accessory cirrus.

In the 50th setiger notopodial postacicular lamella is transversely elongated. The dorsal cirrus extends beyond the postacicular lamella. The neuropodial preacicular lamella is longer than the acicular lobe (Fig. 2 k).

Setae emerge as an open spiral around the acicular lobe, with the opening at the preacicular lobe. The preacicular fascicles in anterior parapodia have short, stout setae with rows of small denticles towards the distal half. These setae become barred setae with transverse rows of denticles in late anterior setigers (Fig. 2 l, m). Eventually the preacicular setae become spinulose in median setigers (Fig. 2 n). The postacicular fascicles include many, long spinulose setae (Fig. 2 o), a few lyrate setae (Fig. 2 p) and short, spinulose setae with coarse teeth on the cutting margin (Fig. 2 q). Acicula number two in each ramus; they emerge together.

Remarks. *Inermonephtys japonica* can be distinguished from *I. palpata* PAXTON, 1974 from Queensland by the following: the nuchal organ is an eversible digitate cirrus, instead of three processes, and an accessory cirrus on the interramal cirrus is present on the first cirrus, instead of after the first ten segments.

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Type series. Holotype, NSMT-Pol. H 184; paratype, NSMT-Pol. P 185.
Distribution. Japan.

Genus *Micronephthys* FRIEDRICH, 1939

Body small. Proboscis with 14 or 22 rows of subterminal papillae. Interramal cirri are nearly or altogether lacking. Parapodial lobes poorly developed. Setae consist of barred and lanceolate setae, and rarely lyrate setae.

Micronephthys sphaerocirrata orientalis LEE and JAE, 1983

(Fig. 3, a–h)

Micronephthys sphaerocirrata orientalis LEE and JAE, 1983, pp. 20–22, fig. 2, pl. 1 A–F.
Micronephthys sphaerocirrata: FAUCHALD, 1968, pp. 17–18, figs. 36–40 (not WESENBERG-LUND, 1949)

Material examined. Mutsu Bay, in 8–38 m (6); Kamaishi Bay, in 19–58 m (58); Otsuchi Bay, in 43–45 m (46); off Oga Peninsula, 39°47.85′N, 139°54.33′E–39°47.64′N, 139°53.84′E, in 39–42 m (6), 39°53.63′N, 139°42.53′E–39°53.67′N, 139°43.19′E, in 75–68 m (15), 40°06.06′N, 139°45.80′E–40°06.34′N, 139°45.50′E, in 68 m (1); Tsukumo Bay, in 20 m (34); Maizuru Bay, in 15–16 m (3); off Boso Peninsula, 35°01.0′N, 140°04.6′E–35°01.3′N, 140°05.1′E, in 77–83 m (3), KT–76–16; off Moroiso, Miura Peninsula, in 10 m (4); Sagami Bay, 35°17.40′N, 139°24.50′E, in 40 m (1), 35°17.48′N, 139°32.48′E, in 6 m (6), 35°12.27′N, 139°35.00′E, in 32 m (1), 35°09.42′N, 139°36.00′E, in 40 m (1), 35°09.42′N, 139°37.00′E, in 11 m (4), 35°07.42′N, 139°36.00′E, in 52 m (2), for survey in Kanagawa Fish. Exper. Sta.; off Koyahata, in 30–150 m (10); near Shimoda, Izu Peninsula, 34°45.0′N, 139°02.1′E–34°45.1′N, 139°02.1′E, in 80–51 m (3), 34°44.9′N, 139°02.2′E–34°44.9′N, 139°02.1′E, in 85–57 m (6); Enshu-Nada, 35° 31.9′N, 137°12.4′E, in 30 m (16); off Kada Bay, near Owase, in 20–28 m, (2); Kushimoto, in 18–50 m (30); Tosa Bay, 33°28.3′N, 133°33.7′E, in 23 m (7), 33°26.6′N, 133°34.8′E, in 46 m (28); 33°23.1′N, 133°37.4′E, in 80 m (9); Tsushima Strait, 33° 48.6′N, 130°02.7′E, in 45 m (1), 33°57.7′N, 129°11.6′E, in 105 m (1); Ariake Sea, in 12–35 m (2); Kagoshima Bay, 31°12.2′N, 130°40.1′E, in 9–15 m (1).

Description. The largest specimen measures 36 mm in length and 2 mm in width including parapodia, for 66 setigerous segments.

The prostomium is quadrangular, longer than broad; there is no marked border between the prostomium and the first setiger on the dorsal side. The first antennae are situated on the dorsal side just behind the anterior margin of the prostomium, and the second antennae are lateral just in front of the first parapodia. A pair of eyespots is present at the level of the third setiger (Fig. 3 a, b).

The proboscis has 22 rows of terminal papillae and 22 rows of subterminal papillae with 12 to 15 papillae in each row, diminishing in size towards base of the proboscis. There is no middorsal papilla. The proximal surface of the proboscis is smooth (Fig. 3 c). A pair of minute, cone-shaped jaws with a sharp, pointed tip is present (Fig. 3 d).

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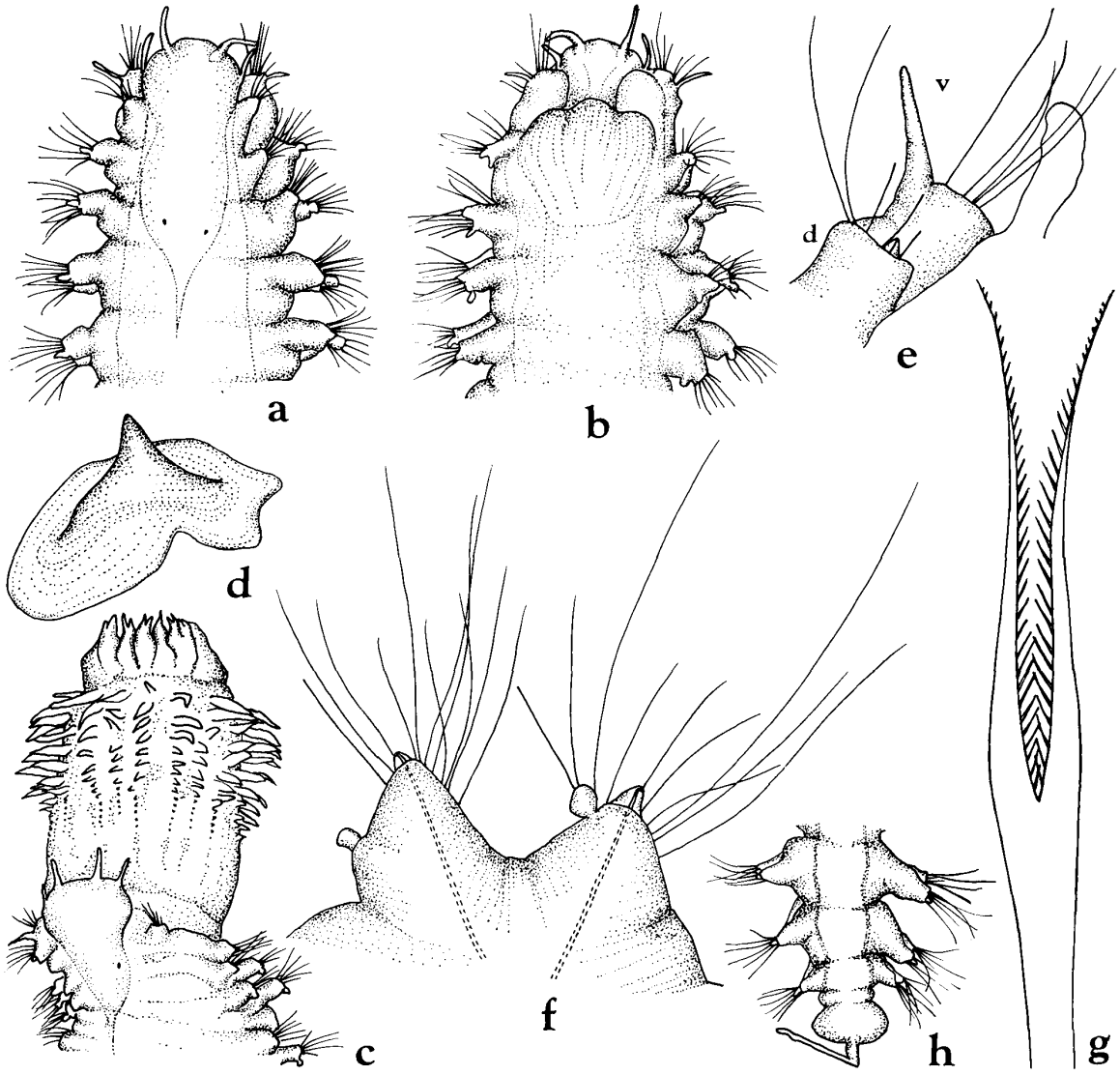

Fig. 3. *Micronephtys sphaerocirrata orientalis* LEE and JAE. a, anterior end, in dorsal view, ×75; b, the same, in ventral view, ×75; c, proboscis, in dorso-lateral view, ×40; d, jaw, ×260; e, first parapodium, added second antenna, in dorsal view, ×230; f, 20th parapodium, in anterior view, ×190; g, lyrate seta, ×860; h, posterior end, in dorsal view, ×130.

The first parapodia are biramous, comparatively large and directed forwards. The notoacicular lobe is conical, pre- and postacicular lamellae are low, and dorsal cirrus is absent. The long ventral cirrus is slender and digitiform (Fig. 3 e). In the 20th parapodium noto- and neuropodia have bluntly conical acicular lobes; the preacicular lamellae are obliquely rounded, and slightly shorter than the acicular lobe. The postacicular lamellae are low and rounded. The dorsal and ventral cirri are both nearly spherical in shape (Fig. 3 f). Interramal cirri are absent.

Setae are of three kinds: barred setae in the preacicular fascicles; long spinulose

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setae with minute denticles on the cutting margin and a few lyrate setae (Fig. 3 g) in the postacicular fascicles. The pygidium has a long anal cirrus (Fig. 3 h).

Distribution. Viet Nam; Korea; Japan.

Genus *Aglaophamus* KINBERG, 1866

Proboscis have 14 or 22 subterminal rows of papillae with few to many in a row. Interramal cirri are involute. Acicular lobes tend to be acutely conical and acicula are often curved at the tip. Lyrate setae are usually present.

Aglaophamus sinensis (FAUVEL, 1932)

(Fig. 4, a–i; Fig. 5, a–d)

Nephthys sinensis FAUVEL, 1932, pp. 536–537, fig. 1, a–c; 1933, pp. 40–42, fig. 5; MONRO, 1934, pp. 363–365, fig. 2; TREADWELL, 1936, p. 276.

Nephthys (Aglaophamus) sinensis: USCHAKOV and WU, 1962, pp. 11, 26–27, pl. 4, A–B; 1979, pp. 57–58, fig. 18, A–C.

Aglaophamus sinensis: HARTMAN, 1950, p. 117; FAUCHALD, 1968, pp. 12–13, figs. 16–18; IMAJIMA, 1970, pp. 116, 118; LEE and JAE, 1983, p. 22, fig. 2, pl. 1 G–K.

Material examined. Off Shirikishinai, Hokkaido, in 20 m (4); Otsuchi Bay, in 40–44 m (17); Kamaishi Bay, in 22–24 m (3); Hirota Bay, 39°36.4′N, 141°58.3′E, in 7 m (1); off Oga Peninsula, 39°49.30′N, 139°52.79′E–39°49.17′N, 139°52.29′E, in 39–42 m (4); 39°51.12′N, 139°53.09′E–39°51.35′N, 139°53.04′E, in 22–19 m (1); off Akita, 39°47′N, 139°51.5′E–39°47′N, 140°01.8′E, in 10–60 m (9), for survey of Akita Fish. Exper. Sta.; Tsuruga Bay, in 25 m (1); off Boso Peninsula, 34°51.2′N, 139°55.6′E–34°51.1′N, 139°55.2′E, in 100 m (1), KT–76–16; off Mitohama, Miura Peninsula, 35°10.3′N, 139°36.4′E, in 31.5 m (2); off Moroiso, Miura Peninsula, in 30 m (1); off Koyahata, Sagami Bay, in 15–170 m (10); Enshu-Nada, 35°38.3′N, 137°49.3′E, in 15 m (1), 35°37.2′N, 137°49.8′E, in 60 m (4), 35°32.9′N, 137°25.4′E, in 80 m (4); Kakise, Tomioka, Amakusa, in 30 m (2); off Shimabara, Ariake Sea, in 50 m, coll. H. TSUTSUMI (1); Tsushima Strait, in 85–115 m (11); Shijiki Bay, in 12–23 m (2), coll. I. HAYASHI; around Tanega-shima, 30°36.3′N, 130°51.1′E, in 53 m (1), 30°37.8′N, 130°54′E, in 45 m (1), 30°34.4′N, 131°06.4′E, in 90 m (1), 30°41.5′N, 131°10.6′E, in 66 m (2).

Description. The largest complete specimen measures 39 mm in length and 3 mm in width including parapodia; it consists of 104 setigers; the largest anterior fragment collected from Ariake Sea is 61 mm in length, including the everted proboscis and 9 mm in width including parapodia for 63 setigers. The prostomium is wider than long and rounded; the anterior margin is a slightly convex, thin and spatulate. The first antennae are continuous with the frontal margin; the second antennae are inserted on the ventral side of the prostomium, and are slightly longer than the first one. Eyespots are not visible. Nuchal organs are large and located at the dorsal postectal corners of the prostomium (Fig. 4 a).

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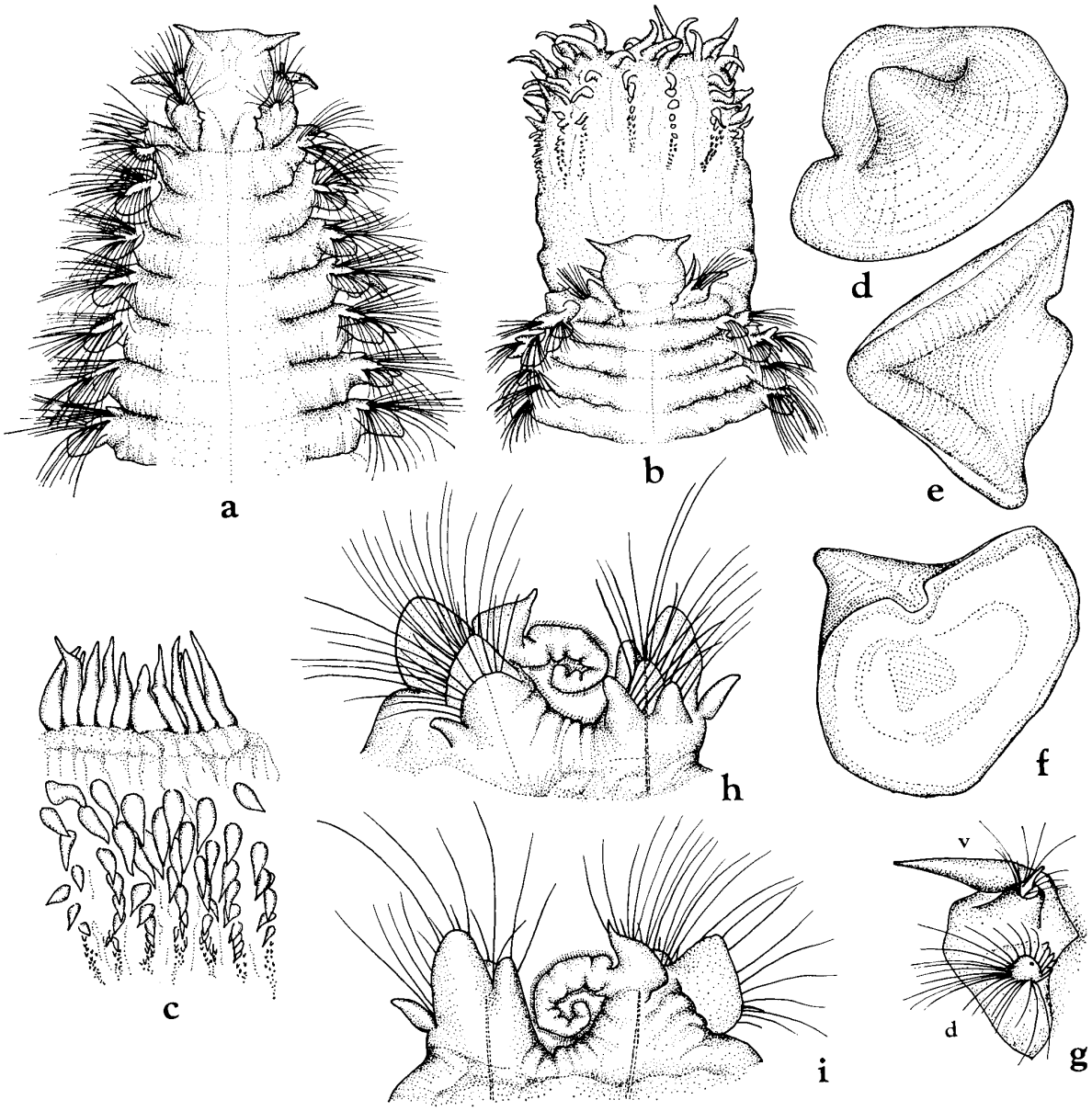

Fig. 4. *Aglaophamus sinensis* (FAUVEL). a, anterior end, in dorsal view, ×15; b, proboscis and prostomium, in dorsal view, ×10; c, a part of proboscis, showing subterminal papillae, in specimen from Oga Peninsula, ×12; d,e,f, jaws, seen from the free edge (d), lying on its anterior surface (e,f), ×45; g, first parapodium, in dorsal view, ×34; h,i, fifth parapodia, in dorsal view (h) and ventral view (i), ×34.

The proboscis, everted in some specimens, has 22 terminal papillae and 14 rows of subterminal papillae. The terminal papillae consist of 10 biramous papillae on each side and two smaller ones in the center. The subterminal papillae become reduced in size proximally, and are replaced by diminutive tubercles arranged in two to three additional rows; there is no a middorsal papilla (Fig. 4 b, c).

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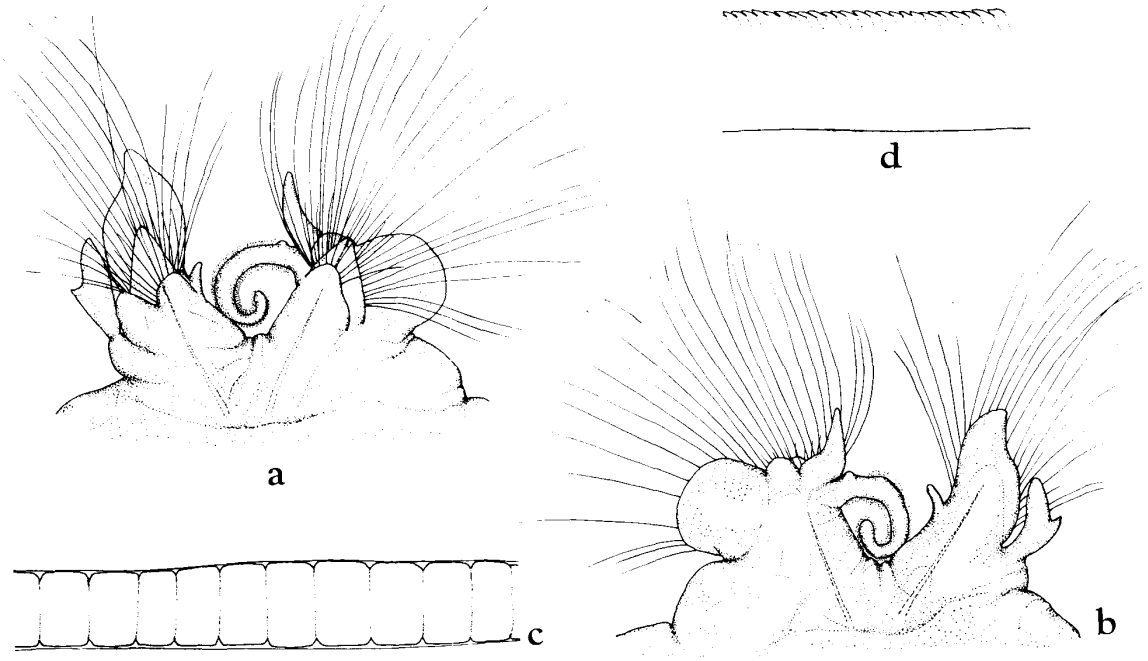

Fig. 5. *Aglaophamus sinensis* (FAUVEL). a,b, 35th parapodia, in anterior view (a) and posterior view (b), ×26; c, a part of barred seta in preacicular fascicle, ×575; d, a part of spinulose seta in postacicular fascicle, ×390.

The jaws are bluntly triangular and horn-colored; there is a distinct ring along its outer margin (Fig. 4 d, e, f).

The first parapodia are biramous and directed forward; the pre- and postacicular lamellae are rudimentary; a dorsal cirrus is absent. The ventral cirrus is slender and well developed (Fig. 4 g). From the second parapodium an involute, interramal cirrus and a dorsal cirrus appear on the notopodium, and the ventral cirrus becomes lanceolate and lobular in shape. In the fifth parapodia the noto- and neuropodial acicular lobes are triangular; the notopodial one is larger than the corresponding neuropodial lobe. The dorsal cirrus is foliose, forming nearly a flattened triangular lamellae. Postacicular lamellae are lanceolate, and the neuropodium has a thick superior lobe (Fig. 4 h, i). In a typical parapodium of the median region, the noto- and neuropodial acicular lobes are triangular; there is a digitate, erect superior lobe on the neuropodia. The preacicular lamellae are distinctly bilobed in the neuropodia, and shallowly bilobed to rounded in the notopodia. The shape of the preacicular lamellae vary in both noto- and neuropodia along the body. The notopodial postacicular lamella is bilobed; the two lamellae differ greatly in size; the dorsal part is semicircular and much larger than the ventral one. The neuropodial postacicular lamella is very long, nearly twice as long as the acicular lobe. The interramal cirri are very long and somewhat convoluted with a small, accessory cirrus near its base. The ventral cirrus is large, elongate and lanceolate, with a notch on the ventral side; the notch appears first at the eighth to tenth ventral cirri (Fig. 5 a, b).

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Setae in the preacicular fascicles are short, with a subdistal barred area (Fig. 5 c); whereas the thin postacicular setae are longer and have minutely serrated subdistal areas (Fig. 5 d). Lyrate setae are absent.

Distribution. East China, Yellow Sea; Viet Nam; Japan.

Aglaophamus malmgreni (THÉEL, 1879)

(Fig. 6, a–n)

Nephthys malmgreni THÉEL, 1879, p. 26, pl. 1, fig. 17, pl. 2, fig. 17; FAUVEL, 1923, pp. 371–372, fig. 145 k; USCHAKOV, 1955, p. 217, fig. 69 E.

Nephthys (*Aglaophamus*) *malmgreni*: BERKELEY and BERKELEY, 1956, p. 235; DAY, 1967, pp. 343–344, fig. 15. 1. n–o.

Aglaophamus malmgreni: PETTIBONE, 1956, p. 557; 1963, pp. 191–192, fig. 48 b; IMAJIMA, 1970, pp. 116, 120.

Material examined. Toyama Bay, 37°06.5′N, 137°08.7′E, in 335–245 m (4), 36°54.5′N, 137°17.0′E, in 960 m (1), KT–75–6, coll. C. OGURO; off Tango Peninsula, 35°55′N, 135°05′E, in 257 m (1), coll. I. HAYASHI; Kashima-Nada, 36°08.4′N, 140° 55.0′E–36°09.5′N, 140°54.7′E, in 198–200 m (4), 36°09.3′N, 140°56.6′E–36°10.0′N, 140°56.1′E, in 280–295 m (5), KT–79–13; off Boso Peninsula, 35°00.1′N, 140°06.8′E–35°00.5′N, 140°07.5′E, in 145–150 m (1), 34°53.8′N, 140°00.5′E–34°53.3′N, 139°59.9′ E, in 180–160 m (1), KT–76–16; Tokyo Bay, 35°05.28′N, 139°40.08′E, in 100 m (1); Sagami Bay, 35°09.42′N, 139°26′E, in 890 m (2), 35°11.42′N, 139°23′E, in 950 m (2), 35°09.42′N, 139°22.06′E, in 720 m (1), 35°13.42′N, 139°11′E, in 370 m (3), for survey Kanagawa Fish. Exper. Sta.; Sagami-Nada, 35°02.4′N, 139°14.6′E, in 1340 m (3), KT–65–34, 35°08.7′N, 139°26.8′E, in 1037 m (1), 35°08.6′N, 139°24.6′E, in 660 m (1), KT–66–23; Suruga Bay, 34°45.8′N, 138°42.5′E–34°45.6′N, 138°42.2′E, in 312–328 m (1), KT–74–14; 35°04.65′N, 138°47.70′E–35°04.70′N, 138°47.70′E, in 345–375 m (2), 34°55.8′N, 138°43.8′E–34°56.4′N, 138°43.8′E, in 365–380 m (2), KT–76–3; Tsushima Strait, in 75–125 m (12); Tosa Bay, 33°24.8′N, 133°36.3′E, in 65 m (2), 33° 23.1′N, 133°37.4′E, in 80 m (2).

Description. A complete specimen measures 22 mm in length and 2 mm in width including parapodia; it consists of 28 setigerous segments. Another fragments are 3 to 4 mm in width.

The prostomium is approximately rectangular, longer than wide, with a straight anterior margin. The two pairs of antennae are short and conical; the second antennae are slightly longer than the first ones. Eyespots are absent. A pair of small nuchal organs is located at posterior corners of the prostomium (Fig. 6 a, b).

The horny jaws are situated inside the proboscis: they have distinct central beaks; a distinct outer ring plus many fainter and less distinct rings are present around the entire circumference of the jaw (Fig. 6 c, d, e).

The everted proboscis is clavate with 22 rows of terminal papillae and 14 rows of subterminal papillae, with 10 to 13 papillae in each row. The distalmost subterminal papillae are offset from the rows; so they appear between and in front of the rows.

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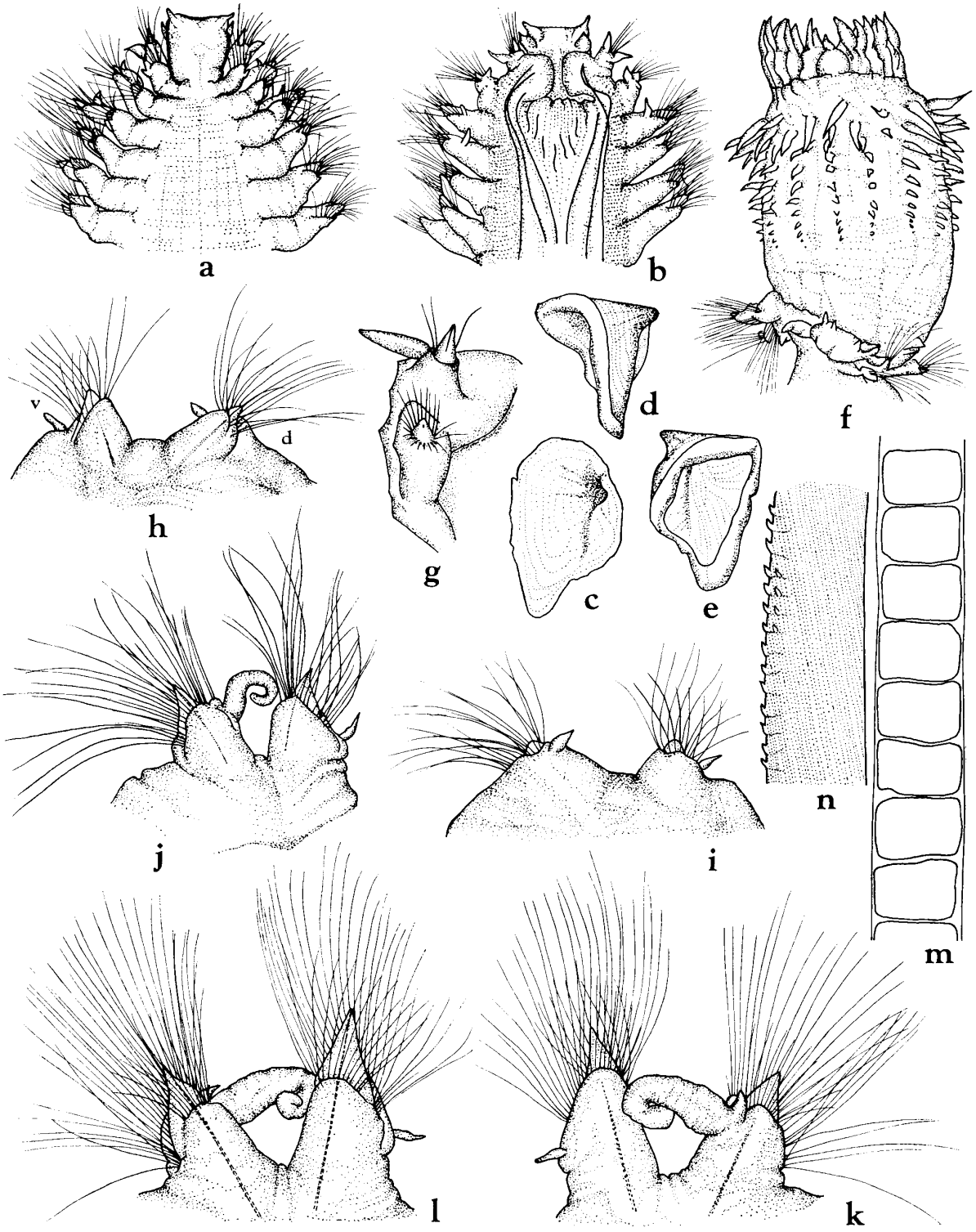

Fig. 6. *Aglaophamus malmgreni* (THÉEL). a, anterior end, in dorsal view, ×12; b, the same, in ventral view, ×12; c,d,e, jaws, seen from the free edge (c,d) and lying on its anterior surface (e), ×38; f, proboscis, ×8; g, first parapodium, in dorsal view, ×34; h,i, fifth parapodia, in anterior view (h) and posterior view (i), ×30; j, tenth parapodium, in anterior view, ×24; k,l, 24th parapodia, in anterior view (k) and posterior view (l), ×24; m, a part of barred seta in preacicular fascicle, ×1160; n, a part of spinulose seta in postacicular fascicle, ×1160.

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There is no long middorsal papilla. The proximal surface of the proboscis is smooth (Fig. 6 f).

All parapodia are biramous throughout, and are well projecting. The first parapodia are large and directed forward, and lying adjacent to prostomium. The notopodium has inconspicuous pre- and postacicular lamellae, with a conical acicular lobe and a small dorsal cirrus. The neuropodium projects beyond notopodium; it has an acutely prolonged, conical acicular lobe and a distally tapered ventral cirrus arising near the dorsal end of neuropodium (Fig. 6 g).

Farther back, the parapodial rami are widely separated from each other; both rami are similar in size. In first nine parapodia noto- and neuropodial acicular lobes are rather low, just slightly extending beyond the preacicular lamellae; there are no interramal cirri (Fig. 6 h, i).

Interramal cirri are first present from the ninth to tenth parapodium; they are somewhat small and involute (Fig. 6 j). The cirri are continued posteriorly to near the end of the body, and are well developed in anteromedian segments where they form a complete coil between noto- and neuropodia. In the typical parapodium the preacicular lamellae are low and rounded, and the acicular lobes are elongated and sharply pointed; neuroacicular lobe is longer than the notopodial one. Noto- and neuropodial postacicular lamellae are rounded and shorter than the acicular lobes. There is no erect superior lobe on the neuropodia. Dorsal and ventral cirri are short and digitiform (Fig. 6 k, l). Preacicular setae are short and barred (Fig. 6 m) and postacicular setae are very long and minutely denticled (Fig. 6 n). Lyrate setae are absent.

Distribution. Arctic Ocean; Bering Sea; north Japan Sea, Gulf of St. Lawrence; Japan (in 75–1340 m).

Aglaophamus gippslandicus bisectus n. subsp.

(Fig. 7, a–i)

Material examined. Otsuchi Bay, in 40–100 m (530); off Boso Peninsula, 34°53.8′ N, 140°00.5′E–34°53.3′N, 139°59.9′E, in 180–160 m (8), 35°00.1′N, 140°06.8′E–35°00.5′N, 140°07.5′E, in 145–150 m (10), 34°57.2′N, 140°02.4′E–34°57.6′N, 140°02.7′ E, in 115 m (2), KT–76–16; near Shimoda, 34°39.9′N, 139°00.1′E–34°39.6′N, 139°00.0′ E, in 70–63 m (1), 34°45.0′N, 139°02.1′E–34°45.1′N, 139°02.1′E, in 80–51 m (1), 34°41.1′ N, 139°00.2′E–34°40.9′N, 138°59.7′E, in 60–53 m (4); Sagami Bay, 35°09.42′N, 139° 32.0′E, in 330 m (1); 35°15.42′N, 139°30.00′E, in 64 m (1), 35°16.42′N, 139°24.00′E, in 270 m (1), for survey in Kanagawa Fish. Exper. Sta.; Sagami-Nada, 35°10.6′N, 139°24.5′E, in 704 m (4); 35°09.5′N, 139°23.7′E, in 465 m (1), 35°08.3′N, 139°19.8′E, in 520 m (1), 35°09.4′N, 139°23.3′E, in 480 m (1), KT–66–23; off Nii-jima, 34°24.20′N, 139°14.80′E–34°24.50′N, 139°15.00′E, in 65–80 m (1); Enshu-Nada, 35°36.0′N, 138° 01.4′E, in 60 m (2); off Oga Peninsula, in 31–93 m (54); Tsukumo Bay, Noto Peninsula, in 20 m (2); Wakasa Bay, in 75–115 m (7), coll. I. HAYASHI; off Kamo, Oki,

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in 53 m (1); Tsushima Strait, 34°03.3′N, 129°04.5′E, in 125 m (1), 34°31.7′N, 129° 35.5′E, in 96 m (1), 34°16.4′N, 130°06.4′E, in 95 m (1); off Tanegashima, 30°37.8′N, 130°54.2′E, in 45 m (holotype and paratype); Tosa Bay, 33°28.3′N, 133°33.7′E, in 23 m (8), 33°26.6′N, 133°34.8′E, in 46 m (5).

Description. The holotype is the larger one and measures 25 mm in length and 2 mm in width, including parapodia; it consists of 67 setigers.

The prostomium is approximately rectangular and has a straight anterior margin. There are no visible eyespots. The first antennae are slender and directed obliquely; the second antennae are drop-shaped and are directed ventrally in a right angle to the prostomium. A pair of nuchal organs is situated at both posterior corners of the prostomium (Fig. 7 a, b).

The proboscis examined by the dissection, has 22 rows of terminal papillae and 14 rows of subterminal papillae with 13 to 14 papillae in each row. The subterminal papillae decrease in size going proximally; there is no middorsal papilla. The proximal surface of the proboscis is smooth (Fig. 7 c). Jaws have a triangular base; the pointed end is located near the ventral side; there is an inner supportive ridge (Fig. 7 d, e, f).

All parapodia are biramous. The first parapodia are directed forward; the notopodium has a large, conical acicular lobe exceeding neuroacicular lobe in size, and pre- and postacicular lamellae are low and almost distally truncated. There is no dorsal cirrus. The neuropodium has a short, conical acicular lobe and a prominent ventral cirrus arising near its distal end (Fig. 7 g). The dorsal cirrus is present from the second setiger. The interramal cirri are first present from the fourth setiger where they are tiny; interramal cirri are present from the third to fifth setigers in the paratype. Farther back, the parapodial rami become widely separated.

In a typical parapodium the notopodium has a projecting, conical acicular lobe with a pointed tip; it is slightly shorter than the corresponding neuroacicular lobe. The preacicular lamella is low and rounded; postacicular lamella is bilobed with both parts well developed; the superior part is a semicircular, convex lamella. The dorsal cirrus is flattened; basally wider and tapering. The interramal cirrus is involuted, without an accessory cirrus. The neuropodium has a large conical acicular lobe, and the preacicular lamella is slightly notched. The postacicular lamella is obliquely triangular; it does not extend beyond the acicular lobe. The ventral cirrus is digitate (Fig. 7 h, i).

Setae are of three types. Barred setae are restricted to the preacicular position, and spinulose setae are present only at the superior side of the notopodial fascicles. The long capillary setae with minute serrations along the cutting edge occur at the postacicular positions in both rami. There are no lyrate setae.

Remarks. Aglaophamus gippslandicus bisectus differs from the stem species, *A. gippslandicus* RAINER and HUTCHINGS (1977) from Australia in the structure of the neuropodial postacicular lamellae. In median parapodia each lamella is broadly rounded, visible in anterior view dorsal and ventral to the acicular lobe in the stem

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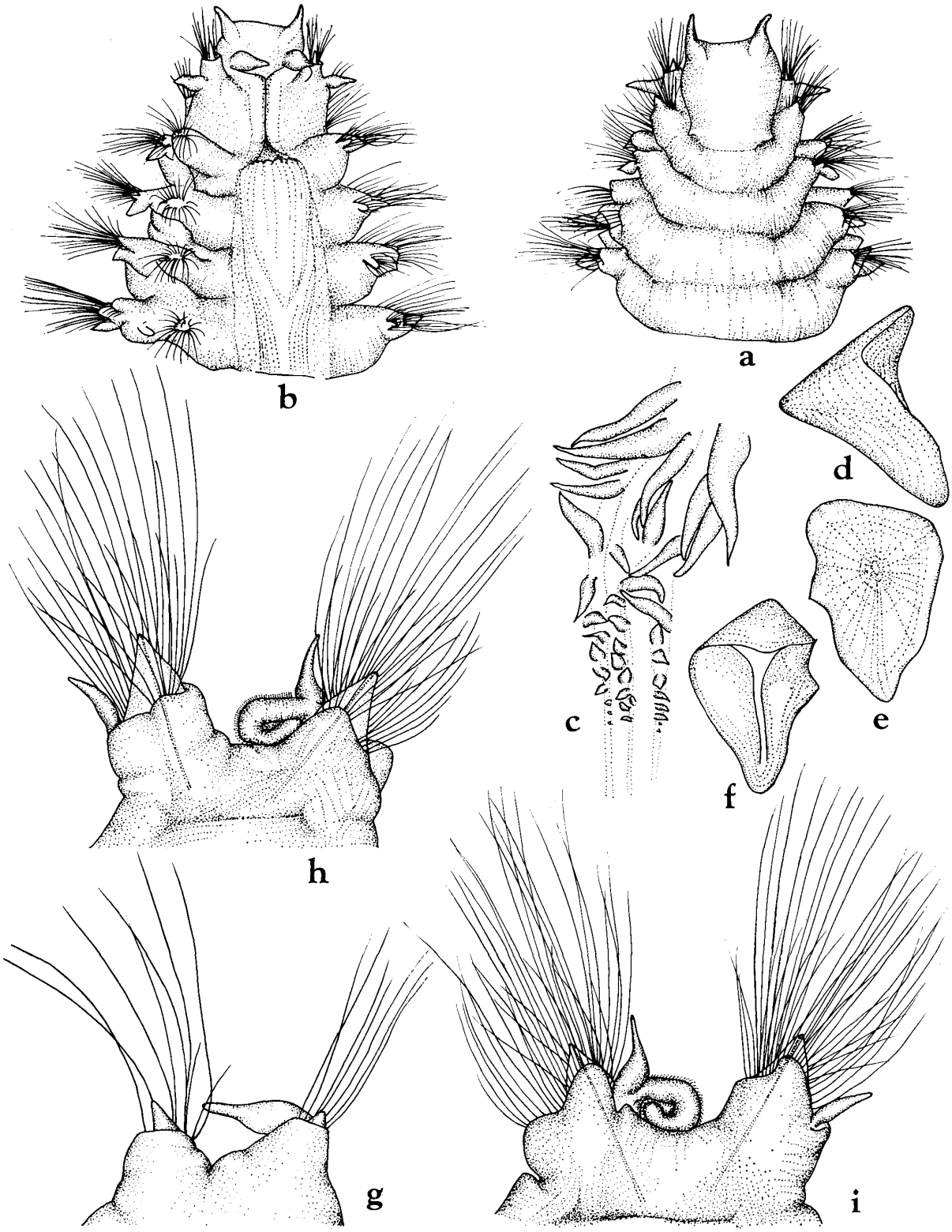

Fig. 7. *Aglaophamus gippslandicus bisectus* n. subsp. a, anterior end, in dorsal view, ×70; b, the same, in ventral view, ×70; c, a part of proboscidal papillae, showing subterminal papillae in three rows, ×40; d,e,f, jaws, seen from the free edge (d,e) and lying on its anterior surface (f), ×70; g, first parapodium, in anterior view, ×70; h,i, 26th parapodia, in anterior view (h) and posterior view (i), ×70.

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species; the corresponding lamellae are triangular and hidden behind the acicular lobe in *A. g. bisectus*. The new subspecies also resembles *A. rubella anops* HARTMAN, 1950 from Canada in some respects. However, *A. rubella anops* has deeply notched notopodial preacicular lamellae and has a slight elongation or spur on the superior edge of the neuropodia, neither of which are present in this new subspecies.

Type series. Holotype, NSMT-Pol. H 186; 3 paratypes, NSMT-Pol. P 187.

Distribution. Japan.

Aglaophamus japonicus n. sp.

(Fig. 8, a–l)

Material examined. Off Nii-jima, 34°22.2′N, 139°13.8′E–34°22.3′N, 139°14.0′E, in 30–65 m (holotype and 3 paratypes), 34°24.20′N, 139°14.8′E–34°24.5′N, 139°15.0′E, in 65–80 m (l); off Oshima, in 23–65 m (7); off Moroiso, Miura Peninsula, in 50 m (l); off Hiratsuka, Sagami Bay, 35°17.20′N, 139°25.40′E, in 42 m (l), for survey in Kanagawa Fish. Exper. Sta.; off Oga Peninsula, 39°49.89′N, 139°53.33′E–39°49.58′N, 139°53.45′E, in 31–33 m (1); off Kinosaki, 35°41.25′N, 134°50.6′E, in 72 m (1); Tsushima Strait, 34°03.3′N, 129°04.5′E, in 125 m (1).

Description. All of the specimens collected are anterior fragments. The holotype is the largest one and measures 17 mm in length and 3 mm in width including parapodia for 37 segments.

The prostomium is rounded quadrangular with inflated sides; there is a pairs of prominent nuchal organs at the posterior corners. The first antennae at the frontal edge of the prostomium are long and slender. The second antennae are inserted on the ventral side of the prostomium and are somewhat longer than the first one. There are no visible eyespots (Fig. 8 a, b).

The proboscis has 22 rows of terminal papillae and has 14 rows of subterminal papillae with 15 to 17 papillae in each row. The papillae in a row are gradually diminished posteriorly in size. A slender middorsal papilla is present. The proximal surface is smooth (Fig. 8 c). Jaws are triangular with a pointed curved tip; there are many annular rings on the surface (Fig. 8 d, e).

The first parapodia are directed anteriorly and are biramous. Noto- and neuroacicular lobes are acutely pointed, and are similar in size. There is a large digitiform ventral cirrus (Fig. 8 f). Dorsal cirrus and interramal cirri are present by the second setiger.

In the fifth parapodia the notopodium has a conical acicular lobe and a low preacicular lamella; postacicular lamella is foliaceous with a small notch on the upper margin. The dorsal cirrus is basally foliaceous with pointed tip. The interramal cirrus is small and slightly involuted. The neuropodium has a conical acicular lobe and a low preacicular lamella; postacicular lamella is triangular and extends beyond the tip of the acicular lobe (Fig. 8 g, h).

In fully developed parapodia at the 27th setigerous segment the notopodium has

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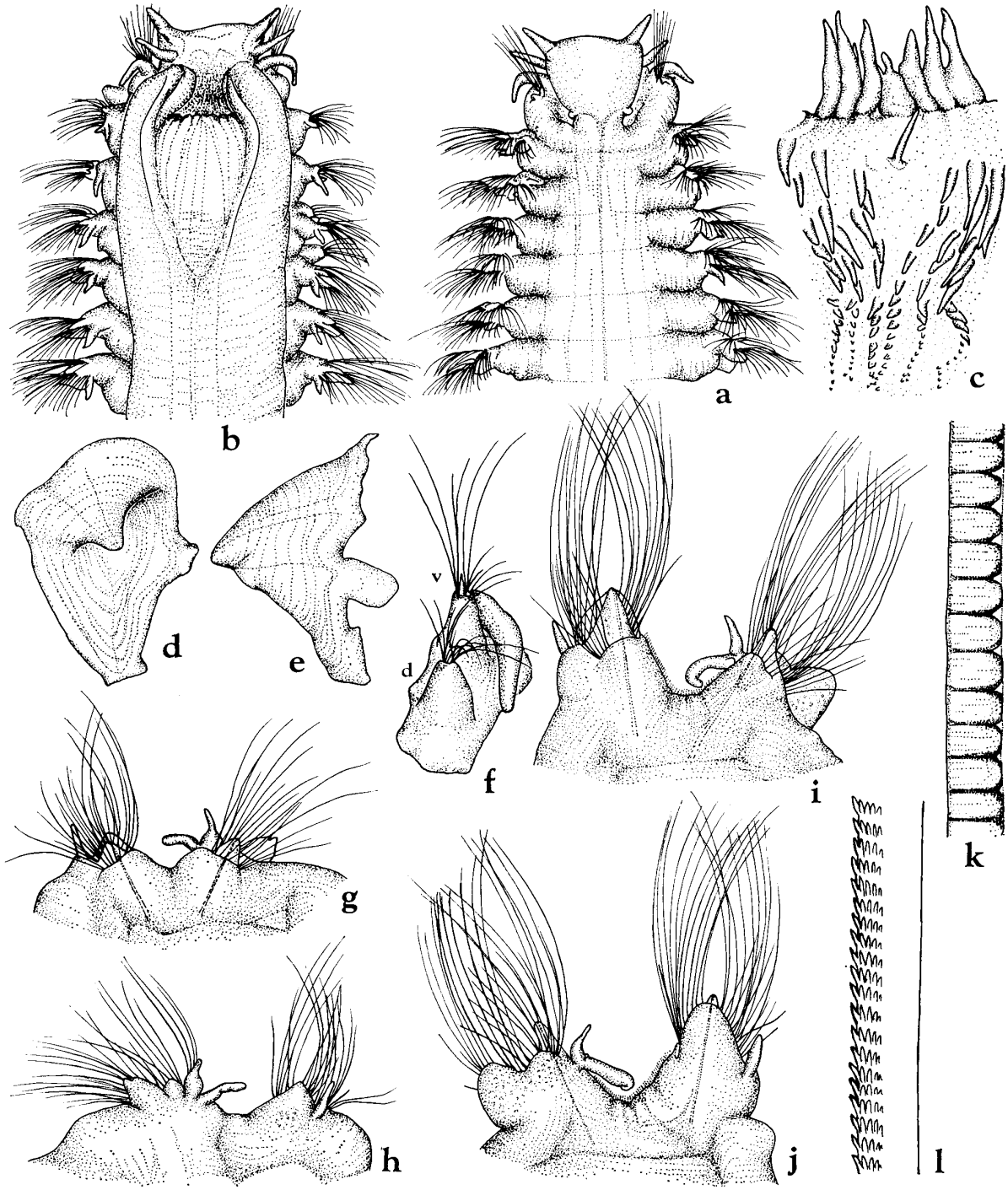

Fig. 8. *Aglaophamus japonicus* n. sp. a, anterior end, in dorsal view, ×16; b, the same, in ventral view, ×19; c, a part of proboscis, in dorsal view, ×19; d,e, jaws, seen from the free edge, ×64; f, first parapodium, in dorsal view, ×46; g,h, fifth parapodia, in anterior view (g) and posterior view (h), ×30; i,j, 27th parapodia, in anterior view (i) and posterior view (j), ×30; k, a part of barred seta in preacicular fascicle, ×750; l, a part of spinulose seta in postacicular fascicle, ×750.

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a conical acicular lobe and the preacicular lamella is triangular. Postacicular lamella is bilobed; the dorsal part is large and foliaceous. The interramal cirrus is comparatively short, never fills the space between the noto- and neuropodia; it has a small tubercle on the superior side near the base of all cirri. The neuroacicular lobe is well developed and longer than the corresponding notoacicular one, and the preacicular lamella is broadly rounded. The postacicular lamella is elongate and lanceolate, extending about as far as the acicular lobe. The ventral cirrus is short and digitate (Fig. 8 i, j).

Setae are of two kinds: the preacicular fascicle has barred setae (Fig. 8 k), and the postacicular fascicle has long, spinulose setae with the denticles in a single row at the cutting edge (Fig. 8 l). There are no lyrate setae.

Remarks. *Aglaophamus japonicus* is characterized by the fact that (1) the proboscis has 14 rows of subterminal papillae with 15 to 17 papillae in each row, and a median dorsal papilla is present, (2) the interramal cirri are present by the second setiger and are comparatively small even in the developed parapodia (3) lyrate setae are lacking.

A. japonicus somewhat resembles to *A. orientalis* FAUCHALD, 1968 and *A. tepens* FAUCHALD, 1968 from the Bay of Nha Trang. However, these three species can be distinguished as follows:

	orientalis FAUCHALD	*tepens* FAUCHALD	*japonicus* n. sp.
Number of subterminal papillae in each row	6–8	5–6	15–17
Notopodial acicular lobe	acutely pointed; as long as postacicular lamella	low and conical, not pointed; as long as postacicular lamella	acutely pointed; extend beyond postacicular lamella
Notopodial postacicular lamella	triangular	rounded	bilobed
Neuropodial postacicular lamella	with foliate prolongation	rounded square shape	elongate lanceolate
Lyrate seta	absent	present	absent

Type series. Holotype, NSMT-Pol. H 188; 3 paratypes, NSMT-Pol. P 189.
Distribution. Japan.

Aglaophamus lobatus n. sp.

(Fig. 9, a–m)

Material examined. Tokyo Bay, 35°11.52′N, 139°41.16′E, in 11 m (1), 35°14.04′N, 139°45.30′E, in 45 m (1); Sagami Bay, 35°07.42′N, 139°36.00′E, in 52 m (1), 35°09.42′N, 139°36.00′E, in 40 m (holotype and 3 paratypes), 35°16.42′N, 139°32.00′E,

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in 20 m (1), 35°16.42′N, 139°30.00′E, in 28 m (1), 35°16.42′N, 139°24.00′E, in 270 m (4), 35°17.45′N, 139°23.20′E, in 58 m (2), 35°17.50′N, 139°22.0′E, in 40 m (1), 35°18.0′N, 139°21.35′E, in 30 m (3), for survey in Kanagawa Fish. Exper. Sta; off Mitohama, Miura Peninsula, 35°10.4′N, 139°36.3′E, in 36 m (2), 35°10.4′N, 139°36.1′E, in 42 m (1); off Moroiso, Miura Peninsula, in 10–50 m (39); off Nii-jima, 34°24.2′N, 139°14.8′E–34°24.5′N, 139°15′E, in 65–80 m (1); Kushimoto, in 45–50 m (1); Tosa Bay, 33°26.65′N, 133°34.8′E, in 45 m (1); Shijiki Bay, in 32 m (3); Amakusa, Kyushu, in 8 m (11), coll. H. TSUTSUMI; Ariake Sea, in 45 m (1).

Description. All of the specimens collected are only anterior ends. The holotype measures 13 mm in length and about 1 mm in width for 42 segments. One anterior body from Aburatsubo in 10 m depth, is 17 mm in length and 3 mm in width including parapodia for 36 segments.

The prostomium is approximately rectangular (proboscis withdrawn), longer than wide, with a slightly convex frontal edge. Eyespots are absent. The first antennae are long and slender; they are directed forward. The second antennae are as long as the first ones but somewhat stouter. Nuchal organs are large and placed at the posterior corners of the prostomium (Fig. 9 a–c).

The proboscis has 22 rows of terminal papillae and 14 rows of subterminal papillae, with four to five papillae in each row. A short middorsal papilla is present. The proximal surface of the proboscis is covered with low warts (Fig. 9 d). The horny jaws form nearly triagonal pyramids, with numerous rings around the entire circumference; there is no inner supportive ridge seen in most species of *Aglaophamus* (Fig. 9 e, f).

The first parapodia are biramous. Both acicular lobes are conical; the neuroacicular lobe is larger than the notopodial one. The ventral cirrus is well developed but the dorsal cirrus is tiny (Fig. 9 g, h).

In the fifth parapodium noto- and neuroacicular lobes are triangular; the corresponding notopodial preacicular lamella follow the outline of the acicular lobes closely. The notopodial postacicular lamella is rounded, and the neuropodial one is elongate oval; both lamellae extend well beyond the acicular lobe. The dorsal cirrus is large and flattened (Fig. 9 i, j).

In the typical parapodium of the 25th setigerous segment the noto- and neuropodial preacicular lamellae are rectangular, distally projecting medially and extending beyond the tips of acicular lobes. Both postacicular lamellae are ligulate and subequal in size; they are larger than the acicular lobes. The involute interramal cirri are present from the third parapodium and are continued to the posterior end of the fragment. Basal swellings and accessory cirri are absent. The dorsal cirrus is very long and foliose, and the ventral cirrus is short and stout (Fig. 9 k, l).

Setae are of three kinds: barred setae in the preacicular fascicles, and spiculose setae with minute denticles along the cutting edge, in addition to lyrate setae (Fig. 9 m) in the postacicular fascicles.

Remarks. *Aglaophamus lobatus* resembles *A. orientalis* FAUCHALD, 1968, from

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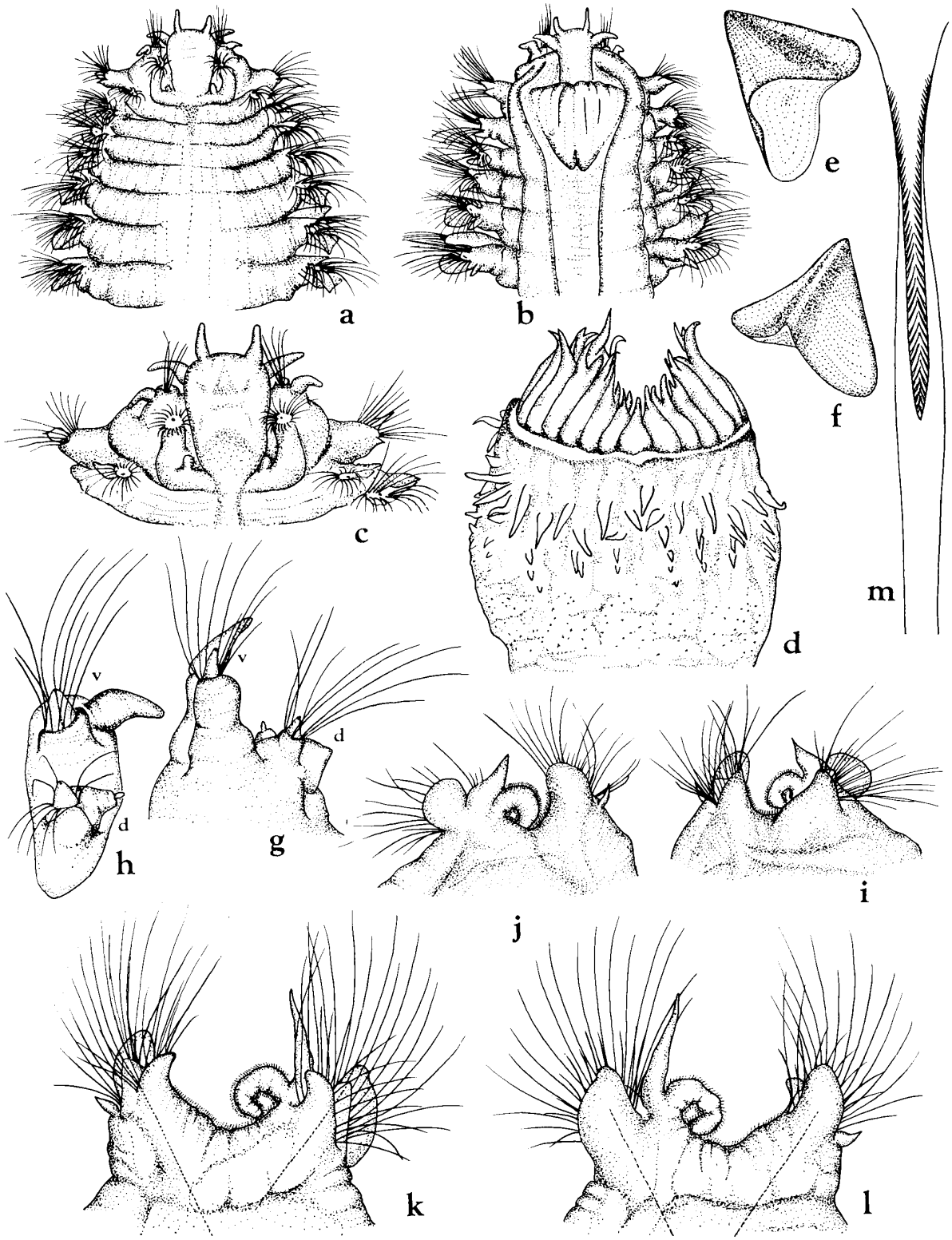

Fig. 9. *Aglaophamus lobatus* n. sp. a,b, anterior ends, in dorsal view (a) and in ventral view (b), ×20; c, prostomium and first setiger, ×33; d, proboscis, in dorsal view, ×16; e,f, jaws, seen from the free edge, ×65; g,h, first parapodia, in anterior view (g) and dorsal view (h), ×62; i,j, fifth parapodia, in anterior view (i) and posterior view (j), ×30; k,l, 25th parapodia, in anterior view (k) and posterior view (l), ×38; m, lyrate seta, ×510.

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the Bay of Nha Trang, in some respects: both have the first antennae directed anteriorly, 14 rows of subterminal papillae and a middorsal papilla, a very long dorsal cirrus and a well developed notopodial preacicular lamella. However, *A. lobatus* may be distinguished from *A. orientalis* in that the first parapodium has a dorsal cirrus, instead of lacking one; the conical noto- and neuropodial acicular lobes are pointed, *A. orientalis* has broadly rounded neuropodial acicular lobe; neuropodial preacicular lamellae are projecting beyond acicular lobes, instead of being low; lyrate setae are present in the postacicular fascicles, instead of being absent.

Aglaophamus juvenalis (KINBERG, 1866) from Brasil resembles *A. lobatus* in that it has parapodia with prolonged dorsal cirri and preacicular lamellae covering the acicular lobe. *A. juvenalis* has a thick, folded erect lobe on the superior margin of the neuropodia; there is no in *A. lobatus*. Subterminal papillae on the proboscis are in 16 rows in *A. juvenalis* and 14 rows in *A. lobatus*.

Type series. Holotype, NSMT-Pol. H 190; 3 paratypes, NSMT-Pol. P 191.

Distribution. Japan.

Aglaophamus sp.

(Fig. 10, a–i)

Material examined. Off Shimabara, Ariake Sea, in 50 m, shell sand bottom (1), coll. H. TSUTSUMI.

Description. An anterior body, consisting of 29 setigerous segments was examined. It measures 45 mm in length including the everted proboscis and 13 mm in width with parapodia.

The prostomium is rounded pentagonal, with a rounded anterior margin. First antennae are short and inserted on the frontal edge of the prostomium; the second antennae are longer and stouter than the first one, and are inserted on the side of the prostomium. A pair of eyespots is located at the level on the first setiger. The nuchal organs are at inner bases of the first parapodia.

The proboscis has 22 rows of terminal papillae and 14 rows of subterminal papillae. The distalmost two or three papillae in the subterminal rows are about as large as the terminal papillae and those more proximal gradually decrease in size. The subterminal papillae are replaced by 14 longitudinal rows of increasingly smaller tubercles with 25 to 35 in each row; the proximal end of each row is divided into several rows of small tubercles. There is no middorsal papilla. The proximal surface of the proboscis is smooth (Fig. 10 a, b).

Each jaw is a somewhat angular elliptical cone with pointed end; there are many rings around the circumference. An inner supportive ridge is absent (Fig. 10 c–e).

The first parapodia are small but clearly biramous with noto- and neuropodial fascicles. The notopodial acicular lobe and preacicular lamella are triangular, and similar in size. The ventral cirrus is well developed and foliose (Fig. 10 f). The dorsal cirrus and interramal cirrus are present from the second parapodia. The in-

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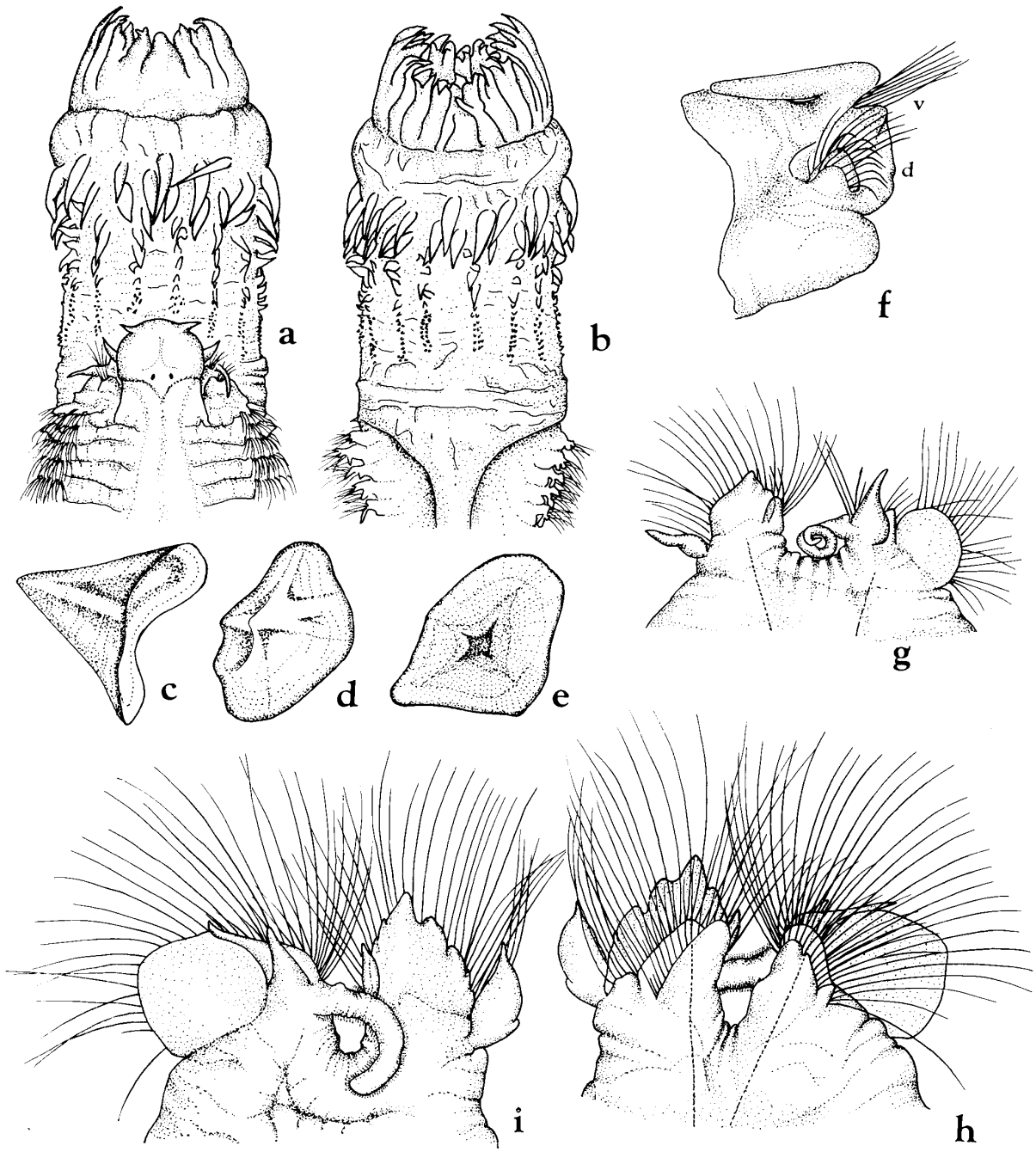

Fig. 10. *Aglaophamus* sp. a,b, proboscis and anterior body, in dorsal view (a) and ventral view (b), ×3; c,d,e, jaws, seen from the free edge (c,d), lying on its anterior surface (e), ×18; f, first parapodium, in anterodorsal view, ×18; g, seventh parapodium, in posterior view, ×9; h,i, 24th parapodia, in anterior view (h) and posterior view (i), ×9.

terramal cirri are involute, and they form almost two complete whorls (Fig. 10 g).

In the 27th parapodium (near the end of the fragment) the notopodium has a broad acicular lobe and a preacicular lamellae with a small notch. The postacicular lamella

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is divided into two parts including a small triangular lamella superiorly and a large, rounded foliaceous one inferiorly; the latter is separated into two parts by a small notch. The dorsal cirrus is foliate and distally tapered. The neuropodium has a rounded acicular lobe and a large tongue-shaped preacicular lamella. The postacicular lamella consists of two lobes: superior one is small and elongate; inferior one is large and distally serrated with five to seven irregular lobes, the ventralmost is shortest; these serrations appear from the 12th parapodium. The ventral cirrus is first present on the second parapodium; it is foliaceous with a notch on the ventral margin, in *A. sinensis* in form (Fig. 10 h, i).

Setae in the preacicular fascicles have a subdistal barred area; most of the setae in the postacicular fascicles are long, slender with minute serrations along the cutting margin. Lyrate setae are absent.

Remarks. This material is allied to *Aglaophamus polyphara* SCHMARDA (1861) from Chile or *A. lobophora* HARTMAN, 1940 from Peru in that both have conspicuous parapodial lobes, including serrated postacicular lamellae. Although the material may be clearly distinguished from the previous species in the features of the proboscis and parapodia, a specific name is not given because the material is anterior fragment only.

Distribution. Southern Japan.

Aglaophamus verrilli (MCINTOSH, 1885)

(Fig. 11, a–p)

Nephthys verrilli MCINTOSH, 1885, pp. 163–164, pl. 26, figs. 6, 7; pl. 32A, fig. 8.
Aglaophamus verrilli: RAINER and HUTCHINGS, 1977, pp. 316–320, figs. 7–11, 41; Table 3.

Material examined. Enshu-Nada, 35°37.2′N, 137°49.8′E, in 60 m (1); Kagoshima Bay, 31°20.8′N, 130°45.5′E, in 70 m (3), 31°20.6′N, 130°34.6′E, in 50–55 m (12), 31°33.8′N, 130°33.8′E, in 50 m (4); Tsushima Strait, 33°49.9′N, 129°29.0′E, in 100 m (1), 34°31.7′N, 129°35.5′E, in 96 m (4); Tosa Bay, 33°24.8′N, 133°36.3′E, in 65 m (9); off Kinosaki, 35°41.8′N, 134°50.6′E, in 87 m (1).

Description. The largest specimen measures 51 mm in length and 5 mm in width including parapodia; it consists of 93 segments.

The prostomium is rectangular with a pair of small lateral notches when the proboscis is retracted; however, the prostomium with proboscis everted becomes flattened and rounded quadrangular. Of the two pairs of antennae, the first antennae are continuous with the frontal margin; the second antennae are inserted on ventral side of the prostomium and are longer than the first one. A pair of eyespots is present near the posterior corners (Fig. 11 a, b).

The proboscis has 10 pairs of bifid papillae and a pair of short, simple middorsal and midventral papillae in the terminal region; the subterminal papillae are in 22 longitudinal rows, with six to nine slender papillae in each row. A middorsal papilla is absent. The proximal surface is closely covered with minute warts (Fig. 11 c).

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The jaws have a roughly triangular base with the pointed end located ventrally; a spur occurs on the posterior edge, and an inner supportive ridge is present (Fig. 11 e–f).

The first parapodia are biramous, rather large and are directed forward. The neuropodium is larger than the notopodium. The acicular lobes of both rami are surrounded by low, rounded pre- and postacicular lamellae; notopodial acicular lobe is large and conical. The dorsal and ventral cirri are well developed and slender. Setal fascicles are developed on both ramii (Fig. 11 g, h).

In the anterior parapodia at the fifth setiger, both acicular lobes are triangular and preacicular lamellae are rounded. The postacicular lamellae are foliaceous and longer than the acicular lobes. The dorsal cirrus is basally thick and distally digitate (Fig. 11 i, j). The interramal cirrus appears from the sixth to eighth parapodia and continues posteriorly to near the end of the body; they are involute and inscribe a complete spiral where best developed.

In the typical parapodium the notopodium has a triangular acicular lobe and a rounded preacicular lamella. The postacicular lamella is foliaceous, and located behind and above the acicular lobe. The short dorsal cirrus is digitiform. The neuropodium has a triangular acicular lobe, as large as the notopodial one, and a rounded preacicular lamella. The postacicular lamella is foliaceous but smaller than the corresponding notopodial one; it extends beyond the acicular lobe. A superior digitiform lobe is first present from the seventh or eighth neuropodium and continues far back, but absent from the last five parapodia. The ventral cirrus is digitiform, and reaches to the tip of the neuropodial postacicular lamella. The interramal cirri are distally coiled, and has a minute accessory cirrus near its base (Fig. 11 k, l, m).

Setae are of four kinds: barred setae (Fig. 11 n) in the preacicular fascicles and much longer, spinulose setae with scattered minute denticles in its basal part (Fig. 11 o) and short lyrate setae (Fig. 11 p) in the postacicular fascicles. Capillary setae occur on the first parapodia.

The species is new to the Japanese fauna.

Distribution. Australia; New Zealand; North America to Panama; Japan.

Aglaophamus amakusaensis n. sp.

(Fig. 12, a–n)

Material examined. Off Tomioka, Amakusa, Kyushu, in 8 m (holotype and 8 paratypes); Ariake Sea, in 22–40 m (5); Tsushima Strait, 34°40.1′N, 129°34.4′E, in 75 m (3); Kagoshima Bay, 31°35.8′N, 130°35.5′E, in 44 m (3).

Description. The holotype which is the largest specimen, measures 31 mm in length and 3 mm in width including parapodia; it consists of 99 segments.

The prostomium is approximately rectangular (proboscis withdrawn), longer than wide, with a straight frontal edge. The first antennae are continuous with the frontal margin and are directed forwards; the second antennae are inserted posterior and

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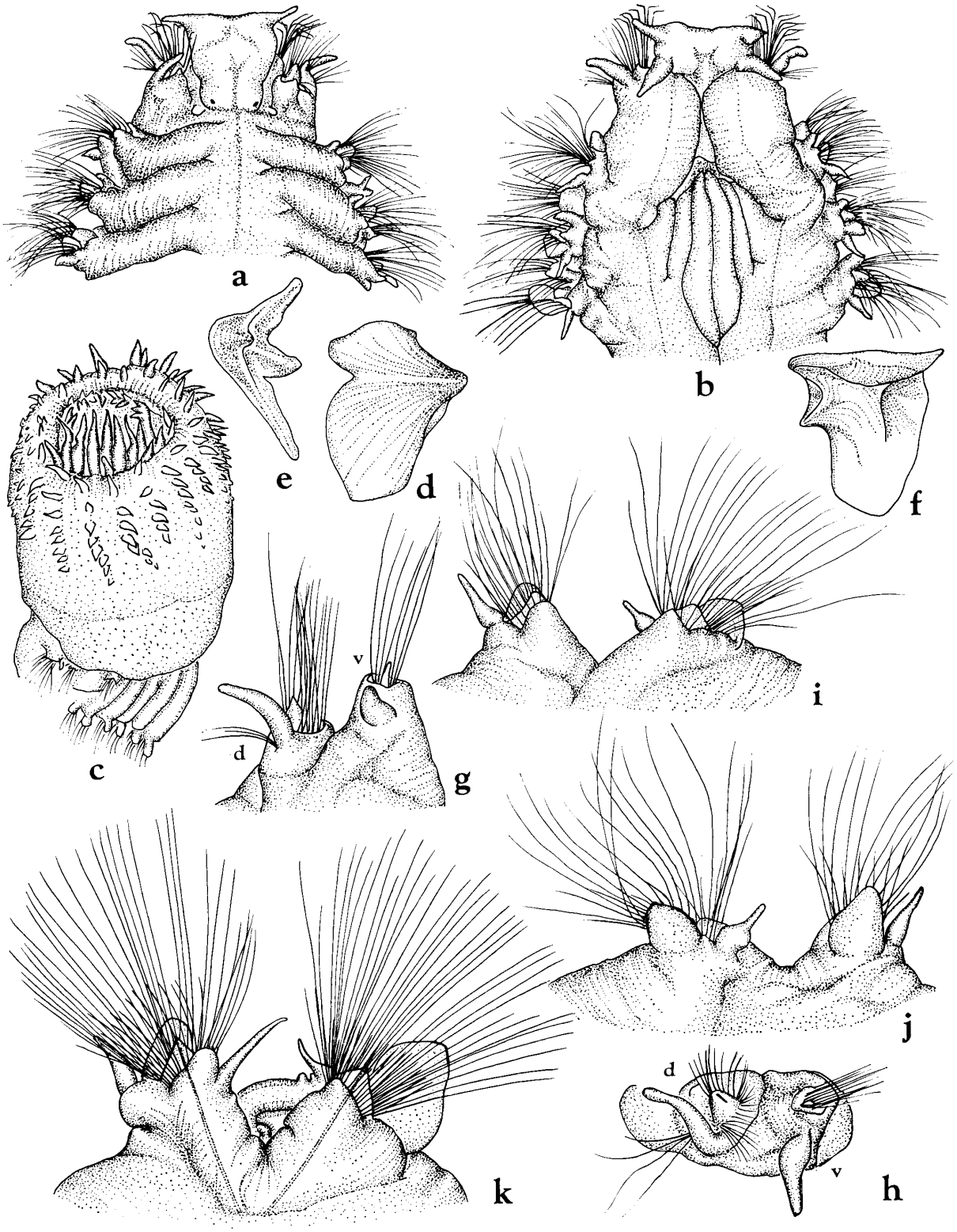

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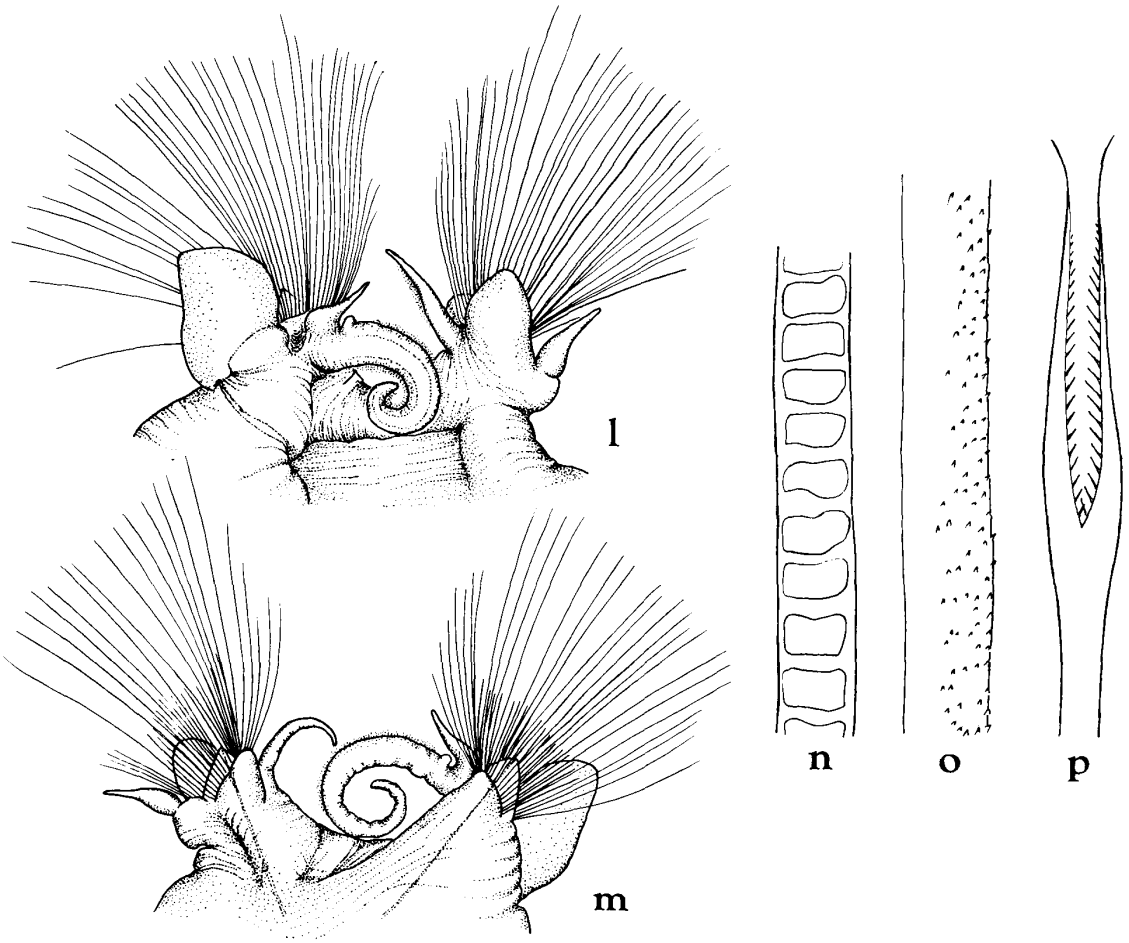

Fig. 11. *Aglaophamus verrilli* (McIntosh). a, anterior end, in dorsal view, ×20; b, the same, in ventral view, ×20; c, proboscis, in ventro-lateral view, ×7; d,e,f, jaws, seen from the free edge (d,e), lying on its anterior surface (f), ×42; g,h, first parapodia, in posterior view (g) and frontal view (h), ×42; i,j, fifth parapodia, in anterior view (i) and posterior view (j), ×35; k,l, 28th parapodia, in anterior view (k), ×35 and posterior view (l), ×32; m, 50th parapodium, in anterior view, ×22; n, a part of barred seta in preacicular fascicle, ×1160; o, a part of spinulose seta in postacicular fascicle, ×750; p, lyrate seta, ×510.

ventral to the base of the first one. The first pair is slender and larger than the second one. Nuchal organs are prominent and occur in the posterior corners of the prostomium. A pair of conspicuous eyespots is present medial to the nuchal organs (Fig. 12 a, b).

The proboscis has 22 rows of terminal papillae and 22 rows of subterminal papillae with four to six papillae in each row. A middorsal papilla is absent. The proximal surface of the proboscis is covered with minute warts (Fig. 12 c). Jaws are roughly triangular with the pointed end located ventrally, and a spur occurs on the posterior edge. An inner supportive ridge is present (Fig. 12 d, e, f).

The first parapodia are reduced but biramous. The notopodial acicular lobe is

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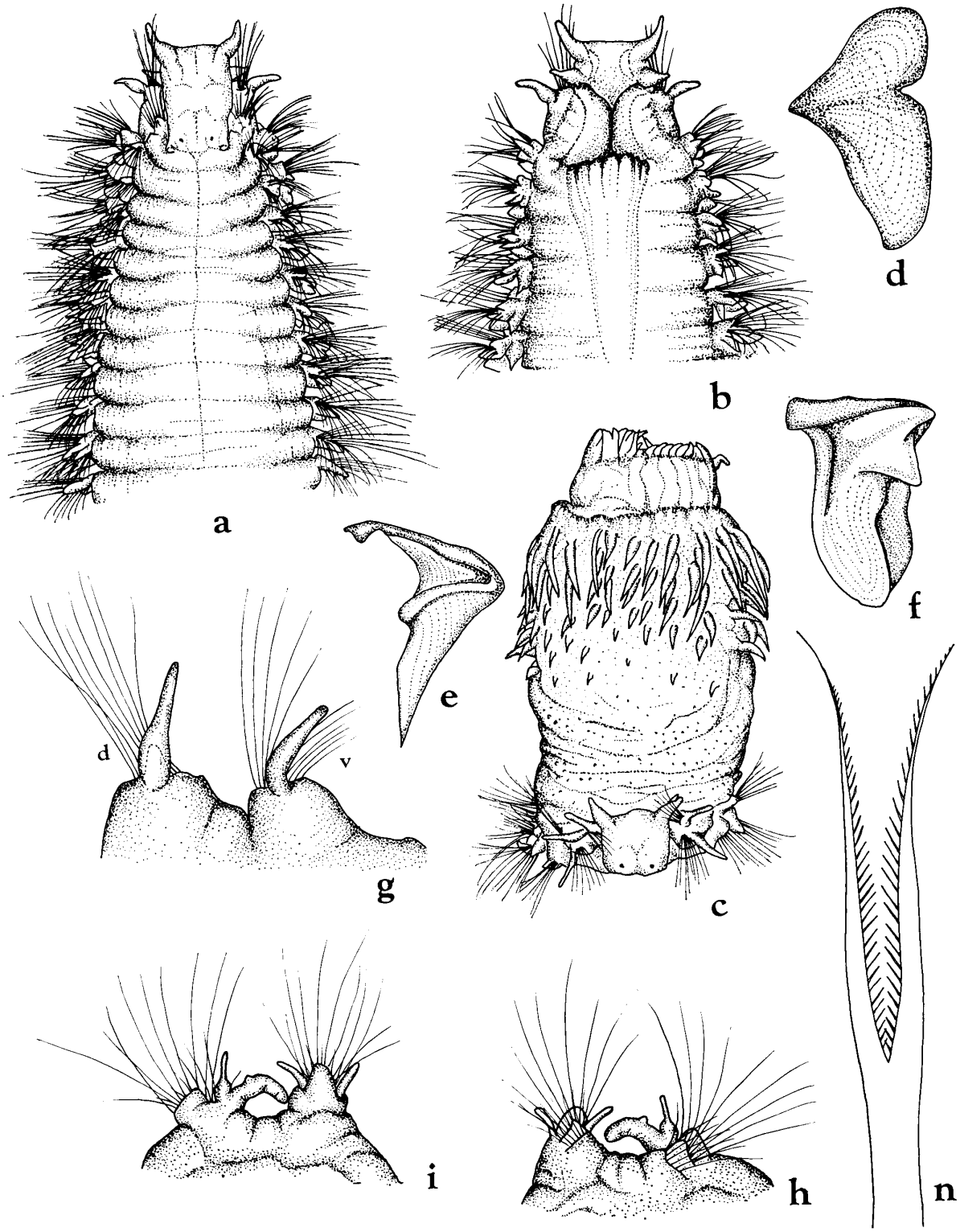

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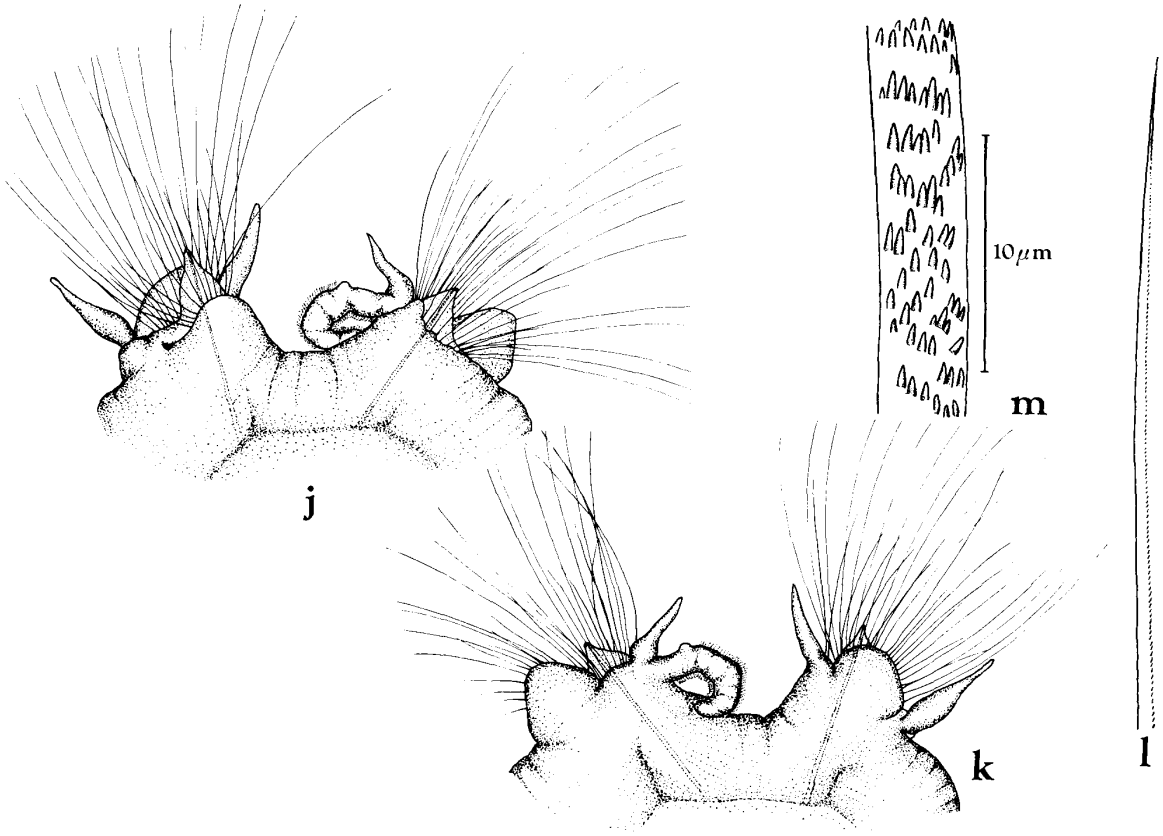

Fig. 12. *Aglaophamus amakusaensis* n. sp. a, anterior end, in dorsal view, ×18; b, the same, in ventral view, ×22; c, proboscis, in dorsal view, ×18; d,e,f, jaws, seen from the free edge (d,e), lying on its anterior surface (f), ×88; g, first parapodium, in anterior view, ×75; h,i, fifth parapodia, in anterior view (h) and posterior view (i), ×44; j,k, 33rd parapodia, distal ends of setae omitted, in anterior view (j) and posterior view (k), ×60; l, distal part of spinulose seta in postacicular fascicle, ×650; m, a part of spinulose seta, modified from SEM; n, lyrate seta, ×590.

conical, whereas the neuropodial acicular lobe is rounded. Pre- and postacicular lamellae are low. The dorsal and ventral cirri are well developed; both are long and digitiform. The setal fascicles form a circle around acicular lobes from postacicular to preacicular positions (Fig. 12 g).

Interramal cirri are present from the third setiger and continue to near the posterior end. Each is involuted and has a small accessory cirrus.

In the fifth parapodium, the noto- and neuropodial acicular lobes are triangular and similar in size. The preacicular lamellae are truncated and the postacicular lamellae are longer than the acicular lobes. The dorsal cirrus is basally thick and distally attenuate. A superior lobe is present from the fourth parapodia on the dorsal side of the neuropodial acicular lobe. The ventral cirrus is digitiform (Fig. 12 h, i).

In the typical parapodium (Fig. 12 j, k) acicular lobes of both rami are triangular, longer in neuropodial than in notopodial positions, and extend distally beyond the

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postacicular lamella. The preacicular lamellae are rounded. The postacicular lamellae are rounded in the neuropodium, whereas the notopodial one is triangular, and is located superior to the acicular lobe. The neuropodial superior lobe is long and slender. The dorsal and ventral cirri are comparatively large and spindle-shaped with pointed tips.

Setae are of four kinds: barred setae in the preacicular fascicles, and spinulose setae with minute denticles scattered or arranged in rows (Fig. 12 l, m) and lyrate setae (Fig. 12 n) in the postacicular fascicles. The spinulose setae are very long, flowing, about as long as wide of the body. Smooth capillary setae are present in the fascicles of the first parapodia. The pygidium has a long anal cirrus.

Remarks. *Aglaophamus amakusaensis* grossly resembles *A. dicirroides* FAUCHALD, 1968 from the Bay of Nha Trang in some respects. *A. amakusaensis* has both limbs of the lyrate setae well developed; *A. dicirroides* have one long and one very short, spurlike limb. *A. amakusaensis* is also allied to *A. jeffreysii* (MCINTOSH, 1885) from northern Kyushu, but it differs in the structure of the postacicular lamellae.

This species is named after Amakusa, Kyushu, the region where the holotype was found.

Type series. Holotype, NSMT-Pol. H 192; 8 paratypes, NSMT-Pol. P 193.

Distribution. Southern Japan.

Aglaophamus jeffreysii (MCINTOSH, 1885)

(Fig. 13, a–f; Fig. 14, a–k)

Nephthys jeffreysii MCINTOSH, 1885, p. 162.
Nephthys Jeffreysii: MCINTOSH, 1901, pp. 220–222, pl. 1, fig. 1.
Aglaophamus jeffreysii: IMAJIMA and HARTMAN, 1964, pp. 155–156.

Material examined. Off Ōshima, Fukuoka Prefecture, Kyushu, 33°56′N, 130°27′ E, in 30 fms. (HOLOTYPE–ZK 1921.5.1.860); Wakasa Bay, in 75 m (2), coll. I. HAYASHI; Shijiki Bay, in 12–32 m (7), coll. I. HAYASHI; Tomioka, Amakusa, Kyushu, in 10–40 m (3); Kagoshima Bay, 31°20.6′N, 130°34.6′E, in 50–55 m (1); Ariake Sea, in 15 m (1); Tsushima Strait, 33°49.9′N, 129°29.0′E, in 100 m (2).

Description. The holotype is an anterior fragment of 55 setigers; it measures 30 mm in length with pharynx fully everted, and 3 mm in width including parapodia. The dorsal and ventral surfaces are whitish yellow.

The prostomium is hexagonal and has a straight anterior margin. The first antennae are inserted at the anterior corners and the second antennae originate at the sides of the prostomium; they are subulate and slightly longer than the first pair. A pair of distinct black eyes are present at its posterior border (Fig. 13 a).

The proboscis has 22 rows of terminal papillae and 22 rows of subterminal papillae with four to seven papillae in each row. A middorsal papilla is absent. The proximal surface of the proboscis is smooth (Fig. 13 b).

The first parapodia are comparatively well developed and biramous. The dorsal

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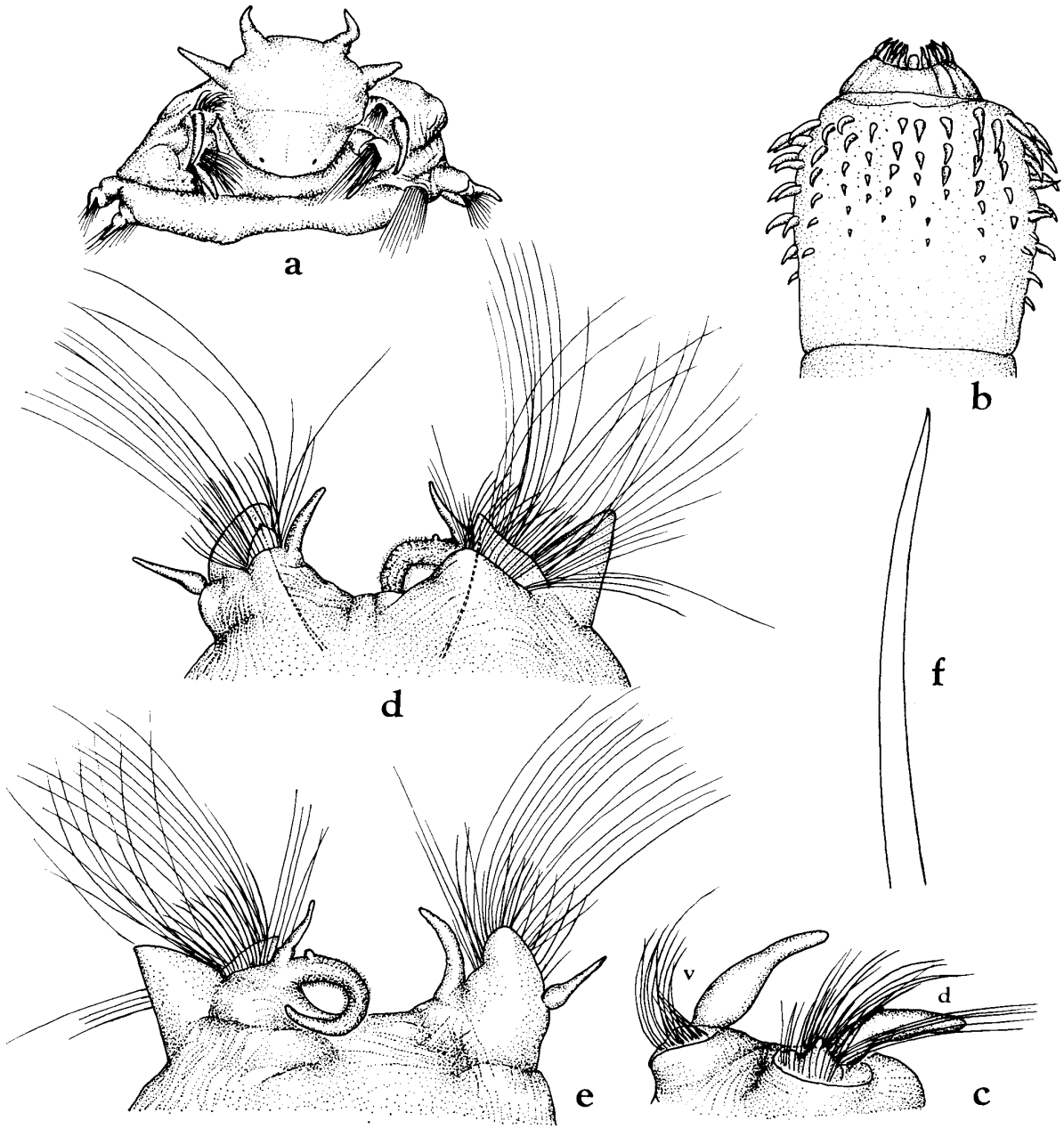

Fig. 13. *Aglaophamus jeffreysii* (McIntosh). HOLOTYPE: a, prostomium, in dorsal view, ×20; b, proboscis, in dorsal view, ×9; c, first parapodium, in anterior view, ×63; d,e, 45th parapodia, in anterior view (d) and posterior view (e), ×30; f, aciculum, ×108.

and ventral cirri are well developed; both are slender digitate. The setal fascicles of the notopodium surround the low acicular lobes from preacicular to postacicular positions (Fig. 13 c).

The interramal cirri are present from the third setiger and continue to the posterior end of the fragment. Each is involuted and has a small accessory cirrus.

In a typical parapodium, the noto- and neuropodial acicular lobes are triangular

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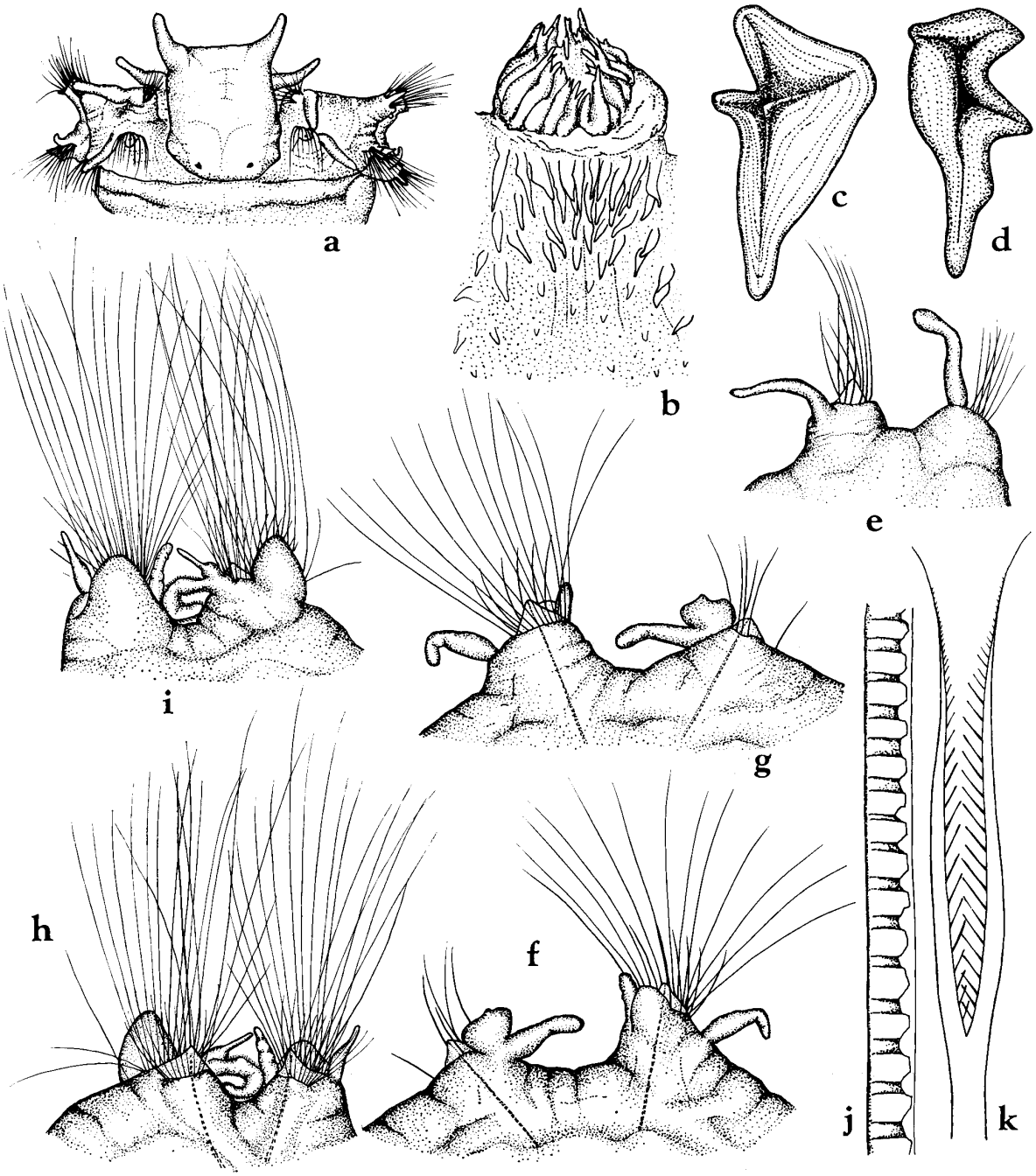

Fig. 14. *Aglaophamus jeffreysii* (McINTOSH). Specimen from Amakusa: a, prostomium and proboscis, ×24; b, a part of proboscis, ×17; c,d, jaws, seen from free edge (c), lying on its anterior surface (d), ×85; e, first parapodium, in posterior view, ×65; f,g, third parapodia, in anterior view (f) and posterior view (g), ×70; h,i, 25th parapodium, in anterior view (h) and posterior view (i), ×30; j, a part of barred seta, ×1160; k, lyrate seta, ×750.

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with pointed tips. The preacicular lamellae are rounded. The notopodial postacicular lamella is triangular, with a nearly straight superior edge; its base is superior to the acicular lobe. The dorsal cirrus is slender and subulate, and continuous with the base of the interramal cirrus. The neuropodial postacicular lamella is oblong, with a rounded distal margin. There is a slender superior lobe connected with the acicular lobe. This superior lobe appears first from the third setiger. The ventral cirrus is long and digitiform (Fig. 13 d, e).

Setae are very long and flowing; barred setae in the preacicular fascicles, and spiculose setae and lyrate setae in the postacicular fascicles. Aciculum number one in each ramous; it has a pointed tip (Fig. 13 f).

Collected material includes a large specimen from Amakusa in 40 m; it measures 39 mm in length and 3 mm in width including parapodia; it consists of 84 setigers. The prostomium is elongated, rounded pentagonal with two pairs of slender antennae; there is a pair of black eyes (Fig. 14 a). The proboscis has 22 rows of subterminal papillae with four to seven papillae in each row; a middorsal papilla is lacking (Fig. 14 b). Jaws are triangular with pointed end located ventrally; there is an inner supportive ridge (Fig. 14 c, d).

All parapodia are biramous. The first parapodia have dorsal and ventral cirri; they are slender and digitiform (Fig. 14 e). In the third parapodia both acicular lobes are triangular. The interramal cirri are digitate and slightly involuted. The dorsal cirrus has a flat, foliaceous base. The neuropodium has a rounded postacicular lamella and a superior lobe (Fig. 14 f, g). In the typical parapodium both acicular lobes are triangular with pointed tip. The preacicular lamellae are low. The notopodial postacicular lamella is subtriangular with a slightly curved superior edge and in superior to the acicular lobe. The dorsal cirrus is digitiform with a thick base. The neuropodial postacicular lamella is rounded and extends beyond the tip of the acicular lobe. The superior lobe is as long as the ventral cirrus (Fig. 14 h, i). Setae are of three kinds: barred setae (Fig. 14 j) in preacicular fascicle, and spinulose setae and lyrate setae (Fig. 14 k) in postacicular fascicle. The pygidium has a long anal cirrus.

Distribution. Southern Japan.

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